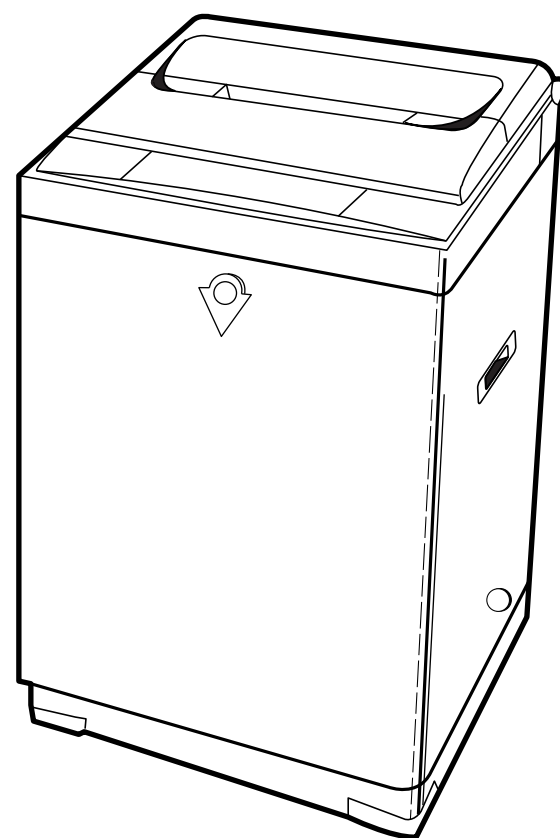


Service Manual

Programmable Washing Machine

DWF-7588TE/NE/ME
8088TE/NE/ME
9288TE/NE/ME
1088TE/NE/ME



DAEWOO ELECTRONICS CO., LTD.

S/M NO.: WF 10880100

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4) The first pickable working system in the world

Unit 6: *Unit 6: The Great Wall of China*

—

will be common:

PULSATOR SYSTEM

When the new shaped pulsator is rotated C.W or C.C.W at a high speed, it makes the 'heart-shaped' water currents as shown below.

WATER CURRENTS

A Water is pushed up near the tub wall by rotation of the pulsator.

B Water is pulled down in the middle of the tub by rotation of the pulsator.

C Water currents is generated by rotation of the pulsator.

AUTOMATIC DRAINING TIME ADJUSTMENT

This system adjusts the draining time automatically according to the draining condition.

Draining condition	Good draining	The washer begins spin process after drainage.
	Bad draining	Draining time is prolonged.
	No draining	Program is stopped and gives the alarm.

FUNCTIONAL PRINCIPLE

1) The micom can remember the time from the beginning of drain to reset point when the pressure switch reaches to "OFF" point

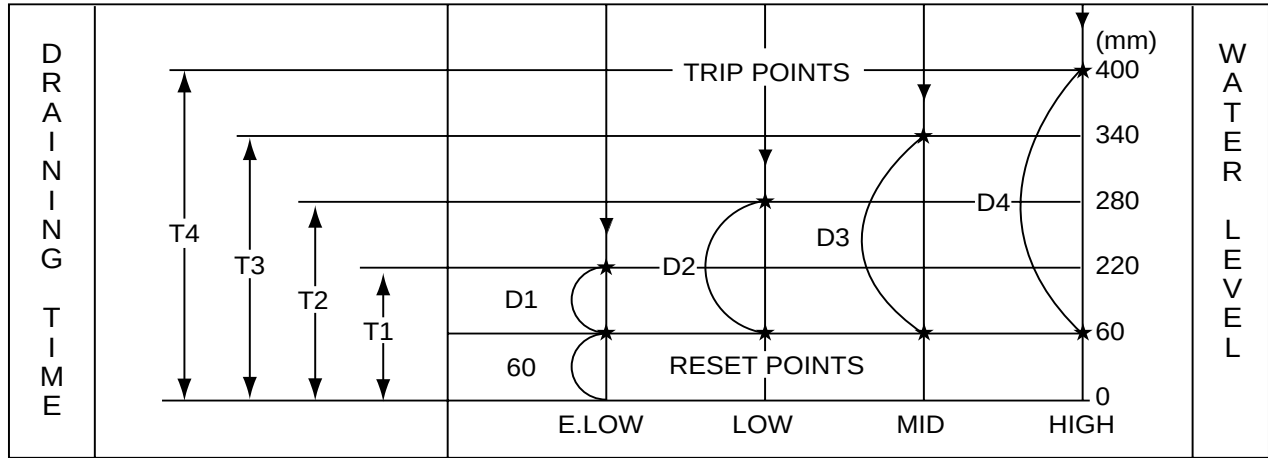
Drain Time	Movement of the Program
Less than 4 minutes	Continue draining
More than 4 minutes	Program stops and gives the alarm with DE blinked on display lamp.

2) In case of continuous draining, residual drain time is determined by micom.

Draining time as a whole = D + 60

Residual drain time.

The time remembered by micom.



T1=D1+60 (Sec.) T2=D2+60(Sec.) T3=D3+60(Sec.) T4=D4+60(Sec.)

SOFTENER DISPENSER

This is the device to dispense the softener automatically by centrifugal force. This is installed inside the auto-balancer.

FUNCTIONAL PRINCIPLE

- 1) Softener stays in room (A) when poured into softener inlet.
 - 2) Softener moves from (A) to (B) by centrifugal force during intermittent spin process.
 - 3) Softener flows from (B) to (C) during rinse process next to intermittent spin.
 - 4) Softener moves from (C) to (D) by centrifugal force during second intermittent spin.
- After spin process is finished, the softener is added into the tub through softener outlet.

FLOW OF THE SOFTENER

	Wash	Intermittent Spin	Hold	Intermittent Spin	Rinse	Spin
Normal Course	Centrifugal force (A) → (B)		Flow in (B) → (C)	Centrifugal force (C) → (D)	Flow in (D) →	_____

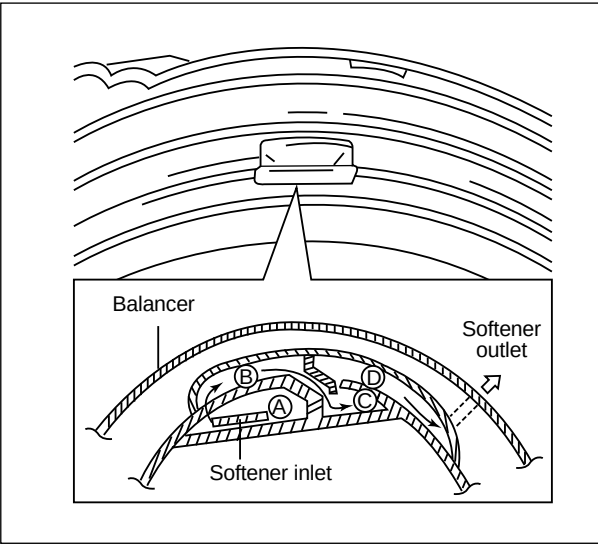
FLOW OF THE SOFTENER INSIDE OF THE BALANCER

Room inside the balancer	Ⓐ	Ⓑ	Ⓒ	Ⓓ
Centrifugal force		↑		↑
Flowing by weight	→	→	→	→

NOTE : Softener moves into the next room when r.p.m of the tub is more than 100 r.p.m.

HOW TO CHECK MOVEMENT

Pour a reasonable amount of "MILK" into softener dispenser and operate the washer with no load. In final rinse cycle, make sure that the milk is added into the tub through softener outler.

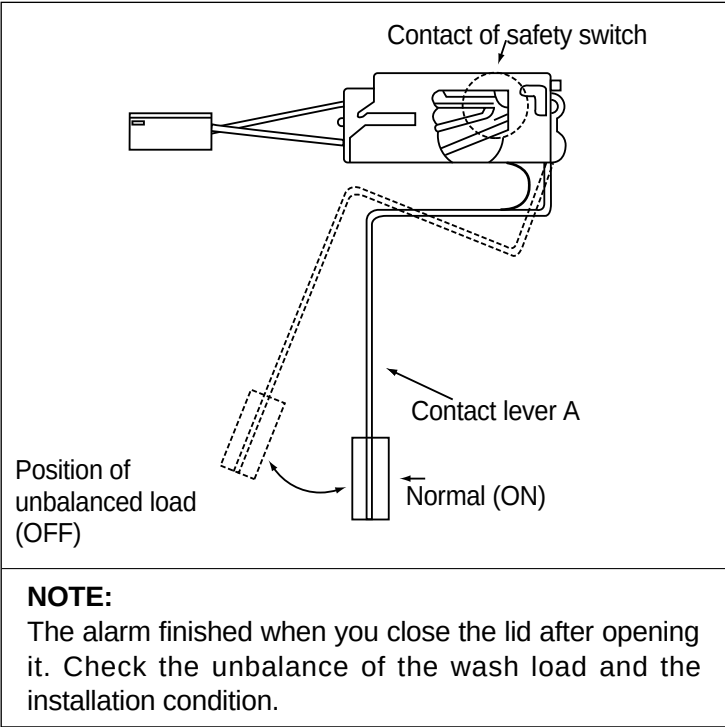


AUTOMATIC UNBALANCE ADJUSTMENT

This system is to prevent abnormal vibration during intermittent spin and spin process.

FUNCTIONAL PRINCIPLE

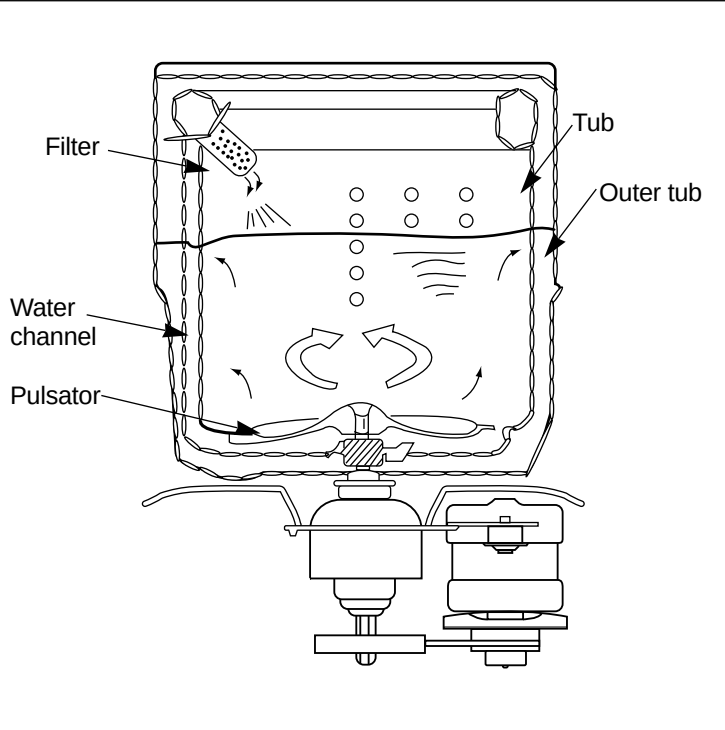
- 1) Always the safety switch contact is “ON” position.
- 2) In case that wash loads get uneven during spin, the outer tub hits the safety switch due to the serious vibration, and the spin process is interrupted.
- 3) In case that P.C.B. ASS’Y gets “OFF” signal from the safety switch, spin process are stopped and rinse process is started automatically by P.C.B. ASS’Y.
- 4) If the safety switch is operated due to the unbalance of the tub, the program is stopped and the alarm is given.



CIRCULATING-WATER COURSE AND LINT FILTER

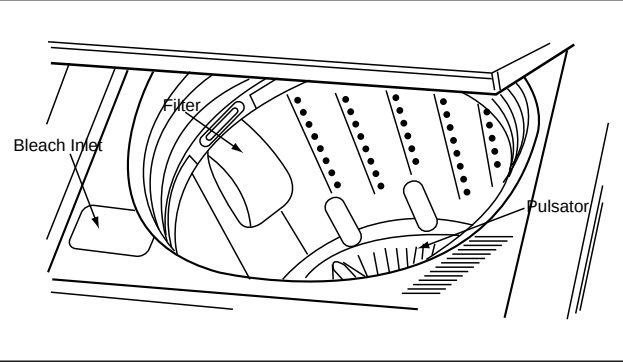
CIRCULATING-WATER

The washing and rinsing effects have been improved by adopting the water system in which water in the tub is circulated in a designed pattern. When the pulsator rotates during the washing or rinsing process, the water below the pulsator vanes creates a water currents as shown in figure. The water is then discharged from the upper part of the tub through the water channel. About 40 L/min. water is circulated at the ‘high’ water level, standard wash load and standard water currents.



LINT FILTER

Much lint may be obtained according to the kind of clothes to be washed and some of the lint may also sticks to the clothes. To minimize this possibility a lint filter is provided on the upper part of the tub to filter the wash water as it is discharged from the water channel. It is good to use the lint filter during washing.



HOW TO REPLACE LINT FILTER

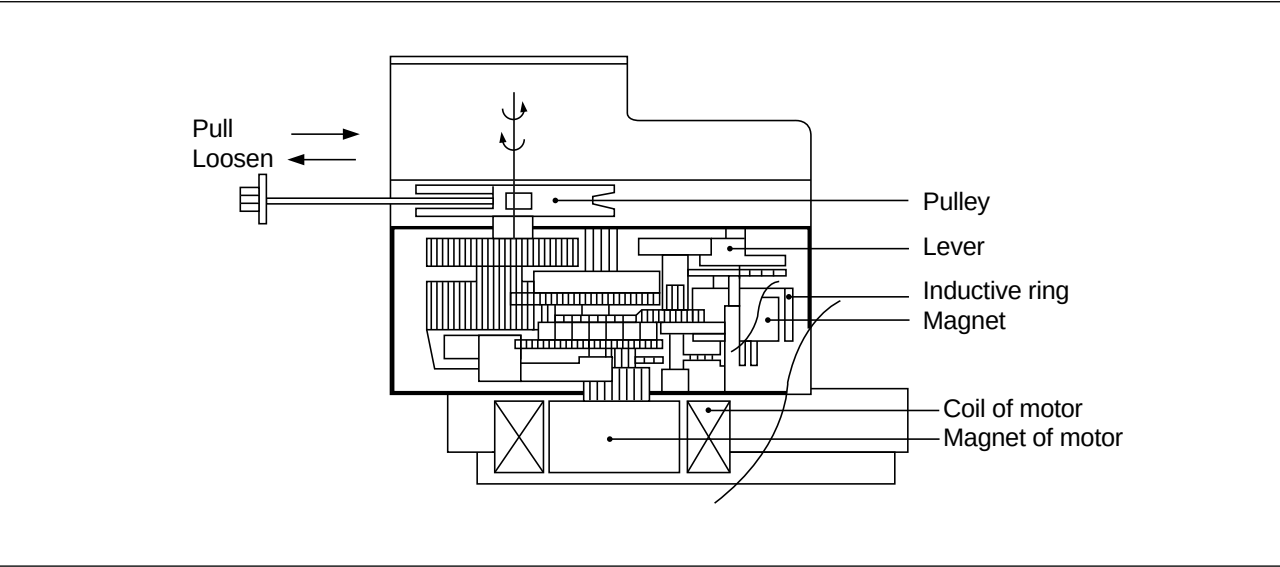
- 1) Pull the filter frame upward.
- 2) Turn the lint filter inside out, and wash the lint off with water.
- 3) Return the filter as it was, and fix the filter frame to the slot.

RESIDUAL TIME DISPLAY

When the START/HOLD button is pressed, the residual time (min.) is displayed on the time indicator, and it will be counted down according to process. When operation is finished, the TIME INDICATOR will light up .

DRAIN MOTOR

STRUCTURE

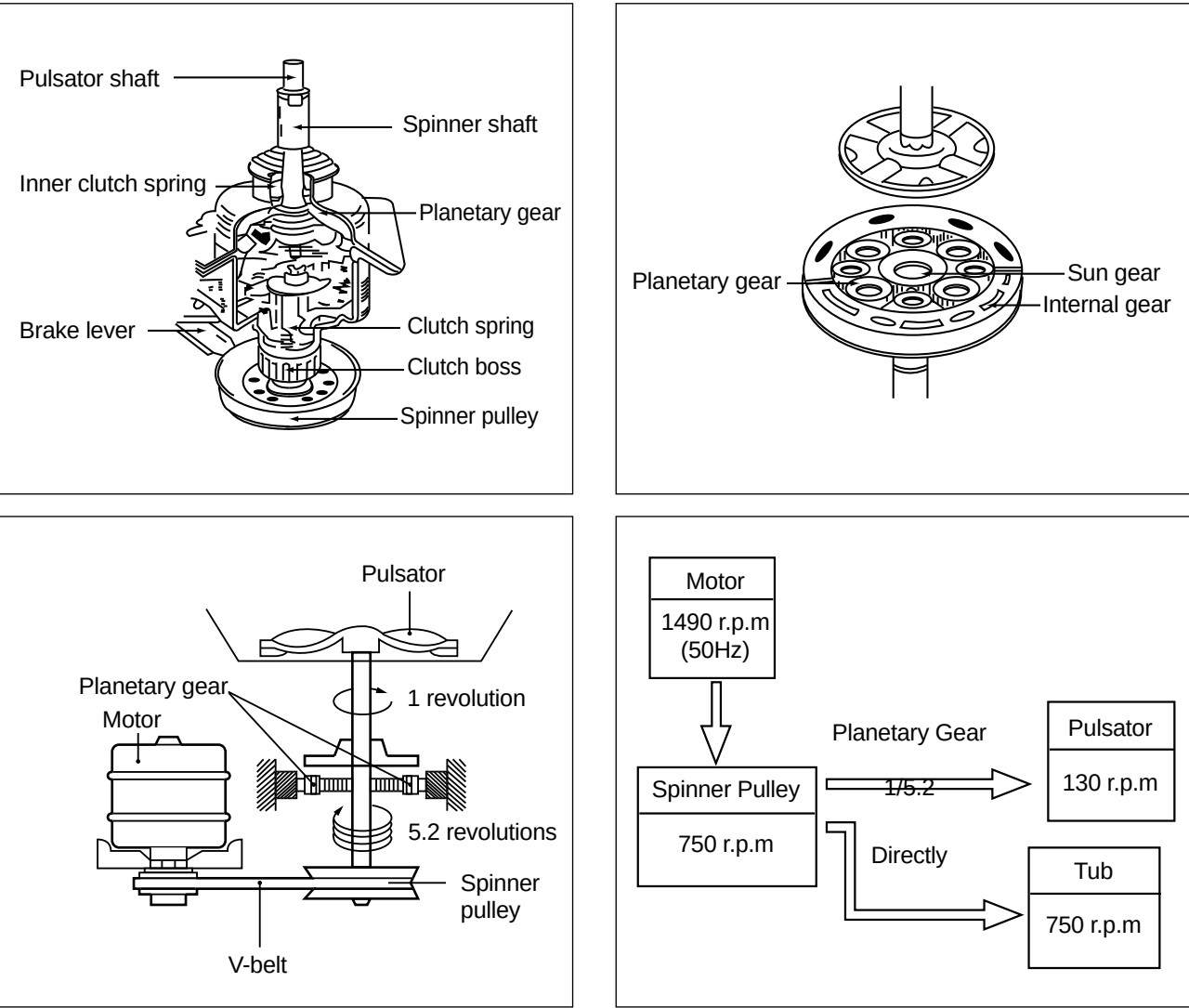


FUNCTIONAL PRINCIPLE

- 1) When the DRAIN MOTOR connected to the power source(A.C 220V), the DRAIN MOTOR rotates with 900 r.p.m and revolves the pulley by gear assembly for reducing.
- 2) When the pulley is rotated, the pulley winds the wire to open the drain valve.
- 3) Therefore, rotation of pulley changed to the linear moving of wire.
- 4) The wire pulls the brake lever of Gear Mechanism Ass’y within 5 seconds.
- 5) After the wire pulled, gear assembly is separated from motor and condition of pulling is held by operation of the lever.
- 6) When the power is turned off, the drain valve is closed because the wire returns to original position.

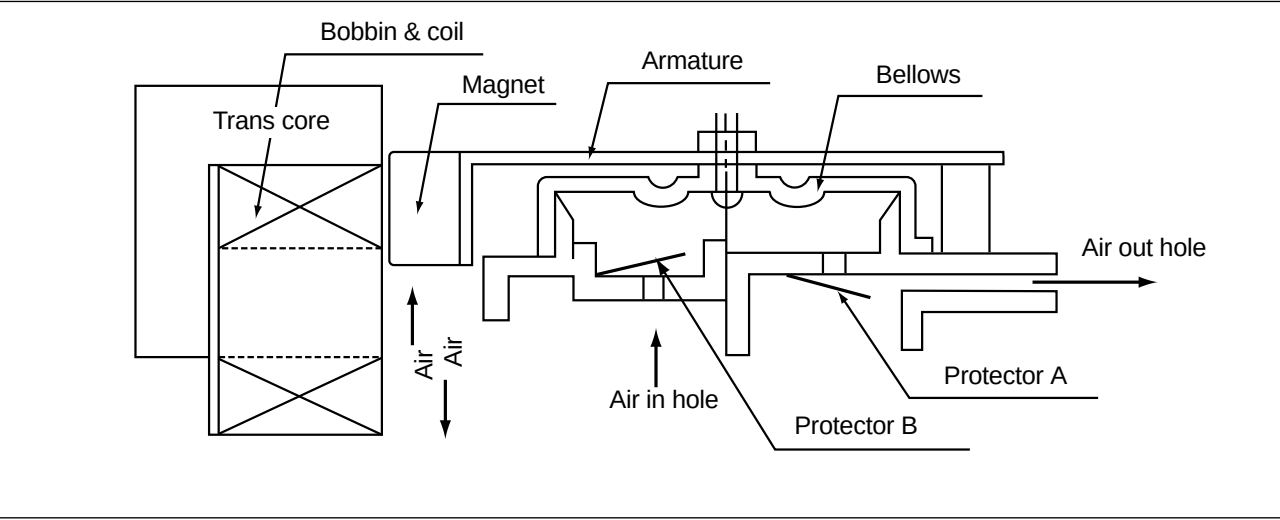
GEAR EMCHANISM ASS'Y

The proper water currents is made by the rotation of pulsator at a low speed (about 140 r.p.m) to prevent the damage to the small sized clothes.



PRINCIPLE OF BUBBLE GENERATOR

STRUCTURE



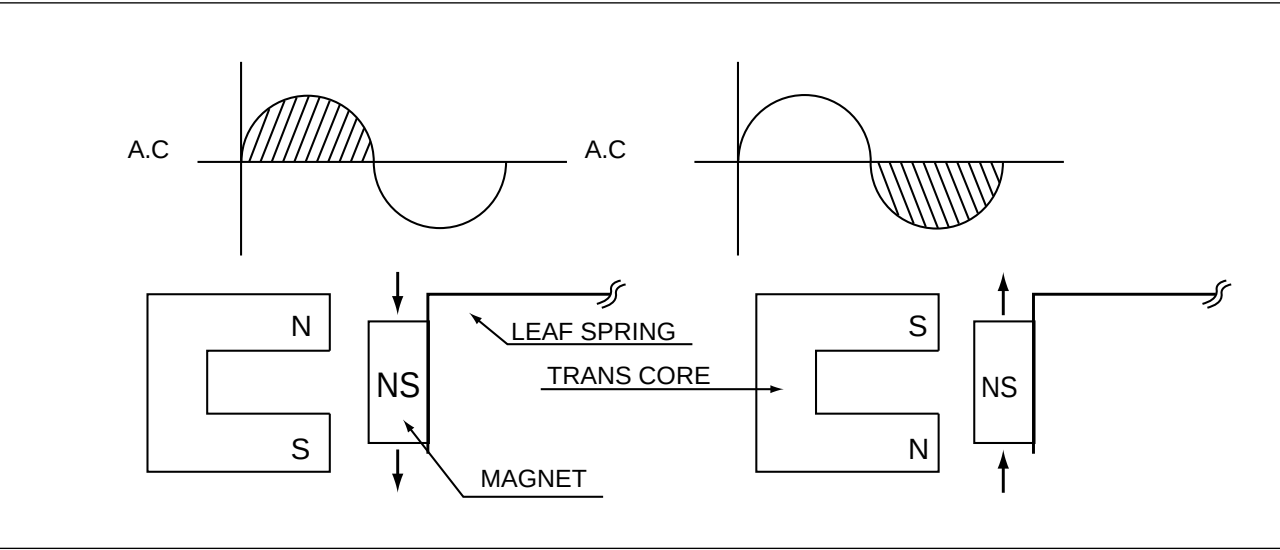
PRINCIPLE OF INTAKE & OUTLET OF THE AIR

INTAKE : ARMATURE moves up, and BELLOWS inhales the air. At the same time, protector B is open and A is close.

OUTLET : ARMATURE moves down, and BELLOWS exhausts the air. At the same time, protector B is close and A is open.

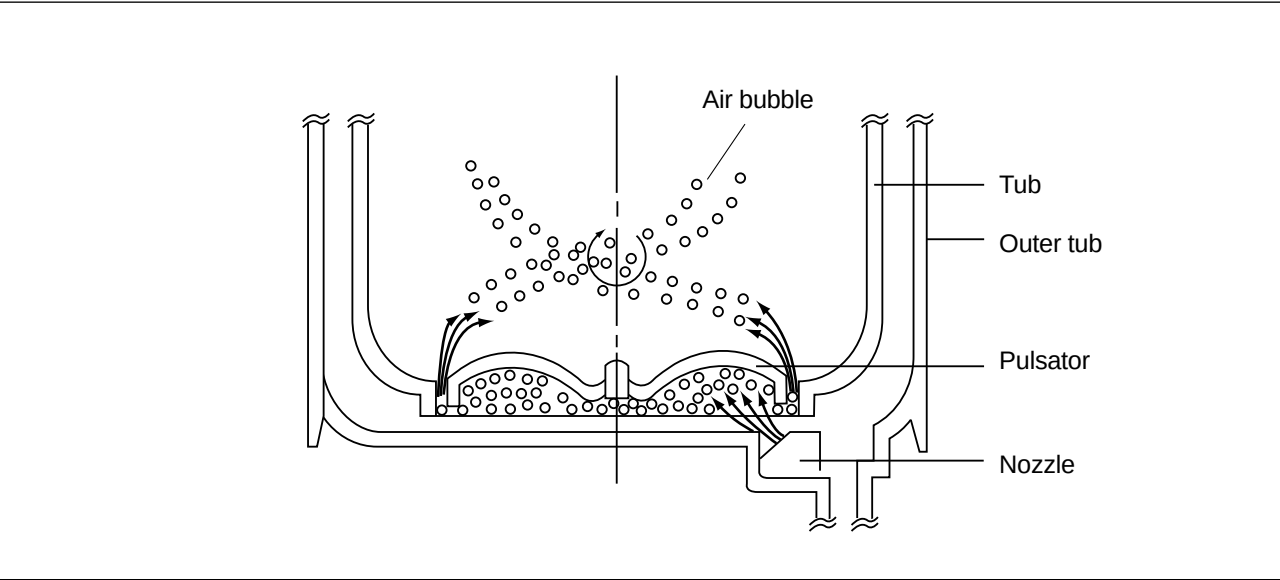
FUNCTIONAL PRINCIPLE OF TRANS & MAGNET

- The phase of A.C electric power changes to 60 cycle/second.
- The magnetic pole of trans core is changed by the change of the phase of A.C electric power.
- The core repeats push and pull (3600 times/min.) of the at mature magnet.



FUNCTIONAL PRINCIPLE OF BUBBLE WASHING MACHINE

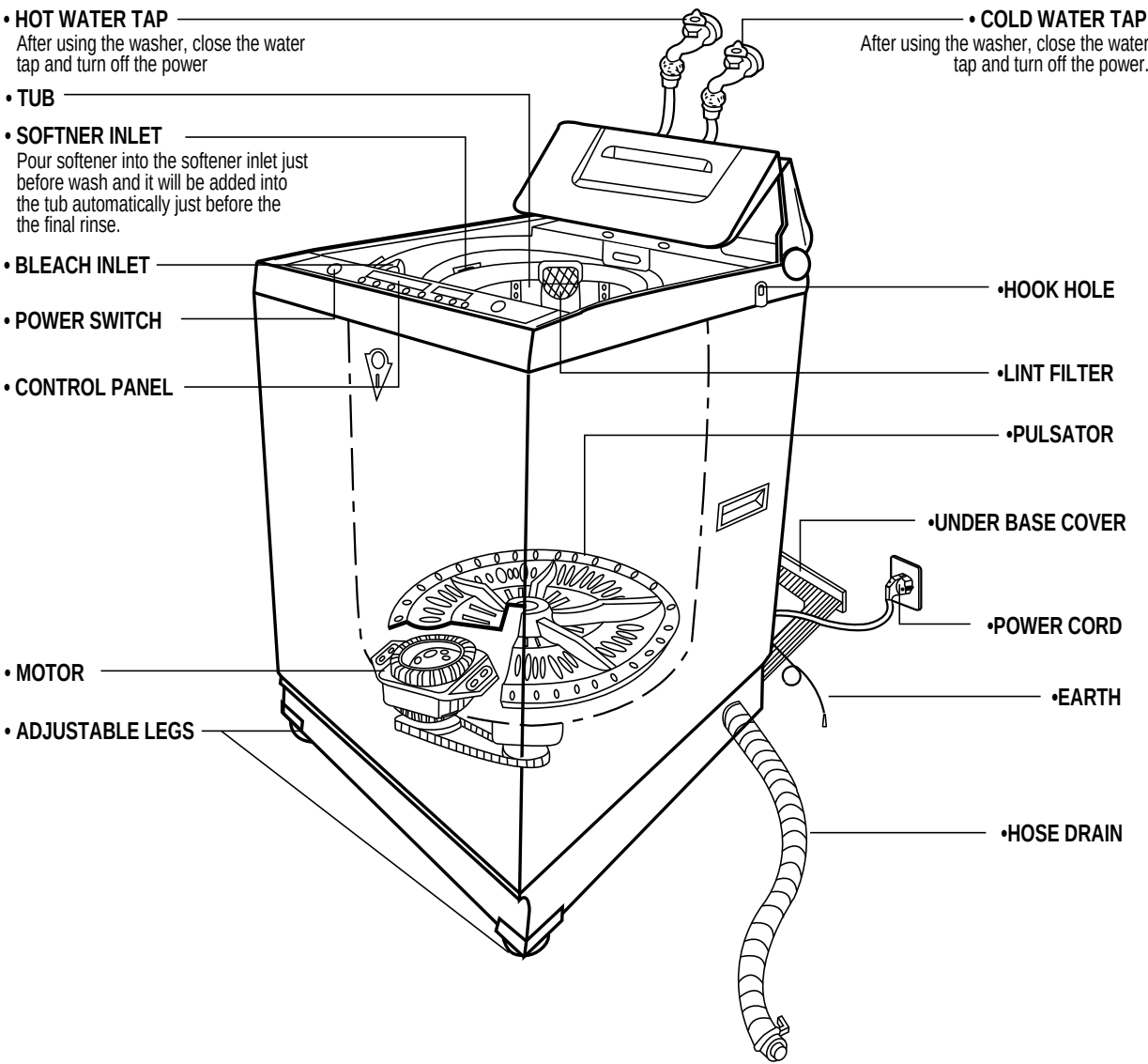
ACROSS SECTION



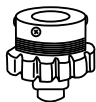
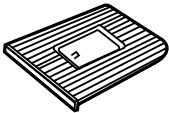
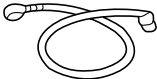
FUNCTIONAL PRINCIPLE

Bubble generator supplies the air from the bottom of outer tub to the inner space of pulsator, the air is dispersed by the rotation of pulsator. Air-bubble is created by the centrifugal force, and rises up.

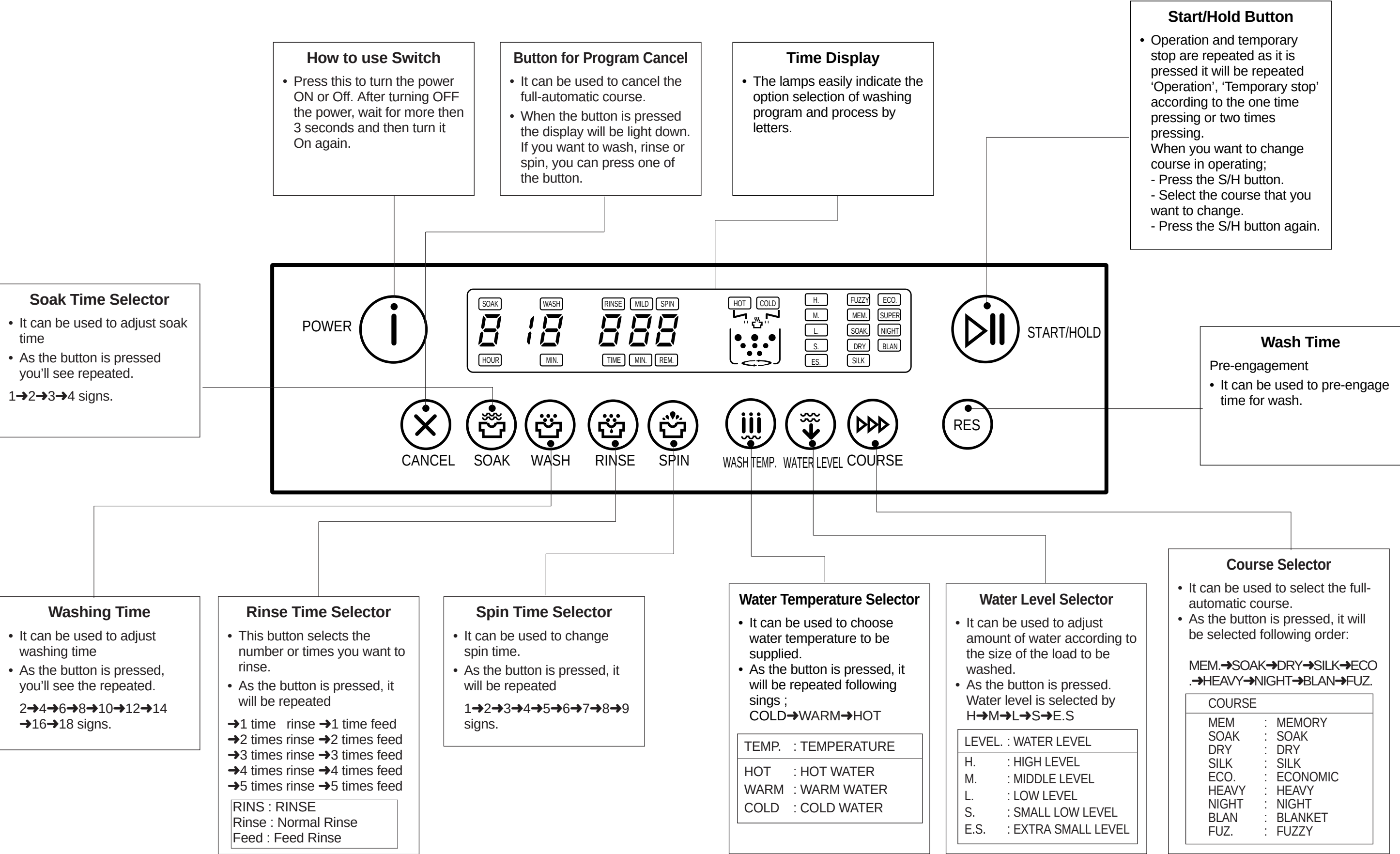
3. STRUCTURE OF THE WASHING MACHINE



ACCESSORIES

WATER TAP ADAPTER(2PCS)	BASKET	HOSE DRAIN
		
UNDER BASE COVER	INLET HOSE(2 PCS)	HOSE DRAIN CLAMP
		

4. FUNCTION OF THE CONTROL PANEL

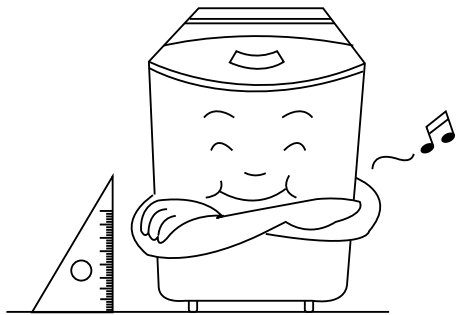


5. DIRECTIONS FOR INSTALLATION AND USE

HOW TO INSTALL THE WASHING MACHINE

SELECTION OF THE INSTALLING PLACE

Install the washer on a horizontal solid floor.
If the washer is installed on an unsuitable floor, it could make considerable noise and vibration.



Never install in these places

- The place where it would be exposed to direct sunlight.
- The place nearby a heater or heat appliance.
- The place where it would be supposed to be frozen in winter.
- The kitchen with coal gas and a damp place like a bathroom.

- The proper installation of the washing machine can increase the wash effectiveness and the life of it.

After installing the washing machine, close the under-base cover.

INSTALLATION OF THE UNDER BASE COVER

1 Separate under base cover from the unit.

2 There is a inserting place under of the back side on the washer.

3 let the base cover that can be shown the "UP" sign.

4 Insert the base cover into the slot of under base until come to the end of the slot.

HOW TO INSTALL ON AN INCLINED PLACE

If the washer is installed on an unsuitable floor, it could make considerable noise and vibration, and could cause a malfunction.

1 Height Setting

- After controlling the height by turning the adjustable leg, let the washer put down to the ground.

2 Check the Horizontal Status

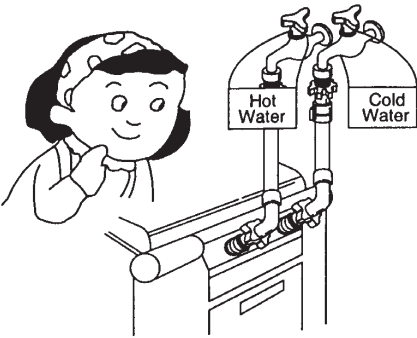
- Check the position of tub above the center of the washer.

NOTES :
The openings must not be obstructed by carpeting when the washing machine is installed on a carpeted floor.

HOW TO CONNECT THE INLET HOSE •For Ordinary Top

IN INSTALLING THE INLET HOSE

Be careful not to mistake in supplying hot and cold water.
In using only one water tap, connect the inlet hose to the cold water inlet.



1 Pull down the collar of the inlet hose to separate it from the water tap adapter.

2 Loosen the four screws at the water tap adapter, but don't loosen the screw until they are separated from the water tap adapter.

3 Connect the water tap adapter to the water tap, and tighten the four screws evenly while pushing up the adapter so that the rubber packing can stick to the water tap tightly.

4 Remove the tape, and screw connector B into connector A tightly.

5 Connect the inlet hose to the water tap adapter by pulling down the collar of the hose end.

6 Connect the inlet hose adapter of the hose to the water inlet of the washer by turning it clockwise to be fixed tightly.

•FOR SCREW-SHAPED TAP

1 Connect the inlet hose to the water tap by screwing the connector D tightly.

2 Connect the connector C of the inlet hose to the water inlet of the washer by turning it clockwise to fix it tightly.

NOTE
In a high water pressure, when start with a set-up of WARM-temperature WASH, it is desirable not to turn the faucet on. High pressure may cause on overflow rinse.

PREPARATION FOR WASHING

WASHING ARRANGEMENT
Please start washing after reading these instructions.



- Is the clothes washable with water?

Arrange

Arrange the clothes

- Does the clothes contain your things in the pockets?

Remove your things from the pockets of the clothes, and then button up and zip

- Is the clothes stained with oil or paint?

Wash the clothes after separating it from other clothes.

- Is the clothes stained with the dust?

Wash the clothes after rubbing it from other dust.

- Is the clothes napped?

Wash the clothes after turning it inside out.

- Is the clothes soft one?

Wash the clothes after putting it in the nylon-bag.

WASHING PREPARATION

① Power Cord

- Connect the power cord to the electric outlet

② Detergent

- Prepare the detergent according to the size of the wash load.

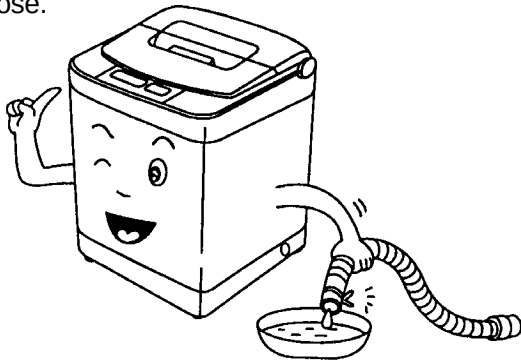
(Put the bleach and the softner into the inlet if necessary.)

③ Clothes

- After putting the clothes into the tub, close the lid.

HOW TO USE AND JOIN DRAIN HOSE

INSTALLING DRAIN HOSE
Widen the drain clip and insert the drain hose into the drain tap together with drain hose. Dipping the end of the drain hose in warm water makes easy to insert the drain hose.



1

Insert the drain hose into the drain tap.

2

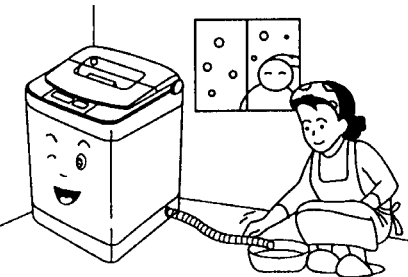
Secure the hose clip around the end of the drain hose.

- In case that it goes over a door-sill water flow will be restricted if any portion of the drain hose is raised more than 20 cm from the ground.

- In case that it is connected when the drain hose is extended, it may not exceed 3 meters.

- Take care the end of the drain hose. Do not sink the end of the drain hose.

HOW TO USE IN WINTER

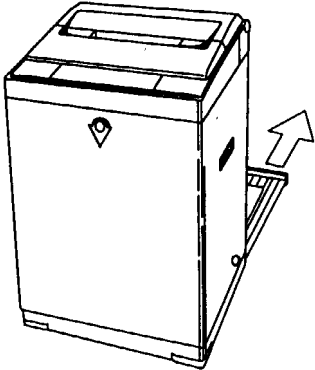


- To avoid the washing machine's being frozen.
 - Remove the inside water of the washing machine completely.
 - Remove the inside water of the inlet-hose and drain hose completely.
- In case of being frozen.
 - Dip the detached inlet-hose in the hot water (about 50°C) (* Don't use above 50°C surely)
 - Leave the tub alone for 10 minutes with pouring the hot water. (about 50 °C)
 - Check the drain and inlet's operation after attaching the inlet-hose.

HOW TO REROUTE THE DRAIN HOSE

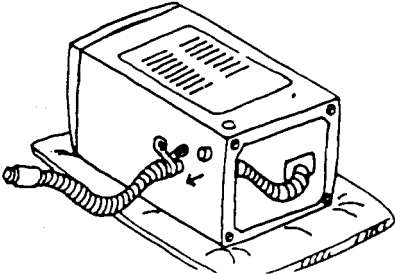
1

Pull out the under base cover to the arrow direction.



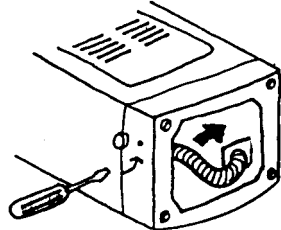
2

After spreading blanket or unit box, lay the washer as the below figure. And detach the outside drain hose with widening drain clip.



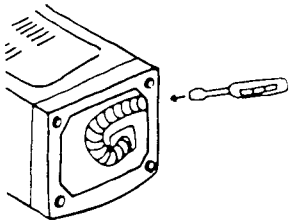
3

Detach the inside drain hose fixing screw with ⊕ driver.



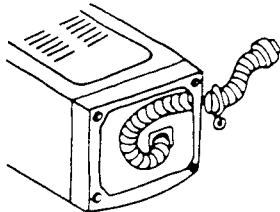
4

After detaching the drain hole cover of the hoping direction insert the inside drain hose. And then fasten the fixing screw tightly.



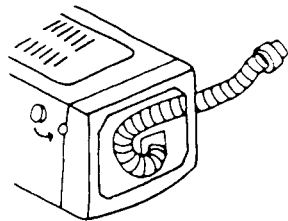
5

Insert the outside drain hose together with the hose-fixing clip.

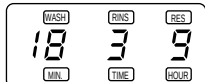


6

Insert the detached drain holecover instead of the original one.



6. PROCEDURE OF FULL-AUTOMATIC WASHING

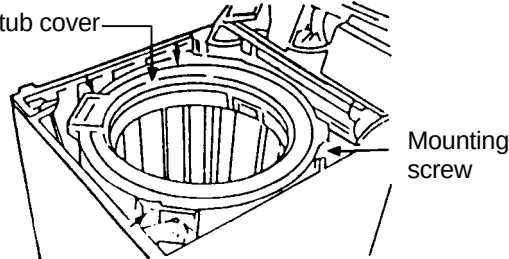
Prepare for washing. ↓ Pressing the power switch ↓ Put the clothes wash in. ↓ Select the washing course.	① Pressing the Power Switch	② Selecting Course		
	Selecting Course	Kinds of the Laundry	Procedure to press the Button	
	FUZZY (SENSOR)	This selection is for general washing.	FUZZY → 	
	MEMORY (USE ONLY FUZZY COURSE)	This selection is washing course by your desire. (The memory items are washing time, rinsing times, spin time, water level, water temperature)	MEMORY  → Select your desired items. → 	
	SOAK 	This course is used to increase the wash effect by keeping the clothes soaked sufficiently in the wash water.	MEMORY  → 	
	DRY 	This selection is effective for delicate clothes • Just follow the washing procedure. • 1.5 kg limitation for one-time-wash.	DRY  Pull the exclusive detergent. Dry-10. of 26g into the tub for dilution with water.	
	SILK 	This selection is effective for some clothes made of silk. • Do not put in the wash marked with dry-cleaning. • 1 kg's limitation for one-time-wash.	SILK  Pull the exclusive detergent. Dry-10. of 26g into the tub for dilution with water.	
	ECO. 	This selection is effective for water saving and energy saving.	ECONOMIC  → 	
	HEAVY 	The selection is effective for blue-jean, climbing clothes, ruck-sack, sports wear (heavy dirty clothes), etc...	STONG  → 	
	NIGHT 	This selection is for a night-washing housewife who has no opportunity at day time.	NIGHT  → 	
	BLANKET 	This selection is effective for blanket, curtain, carpet, etc... • 4 kg's limitation for one-time-wash.	BLANKET  → 	

7. DIRECTIONS FOR DISASSEMBLY AND ADJUSTMENT

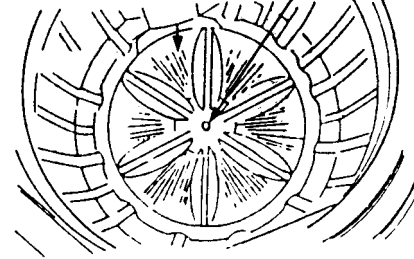
WARNING
BEFORE ATTEMPTING TO SERVICE OR ADJUST ANY PART OF THE WASHING MACHINE, DISCONNECT THE POWER CORD FROM THE ELECTRIC OUTLET.

GEAR MECHANISM ASS'Y REPLACEMENT

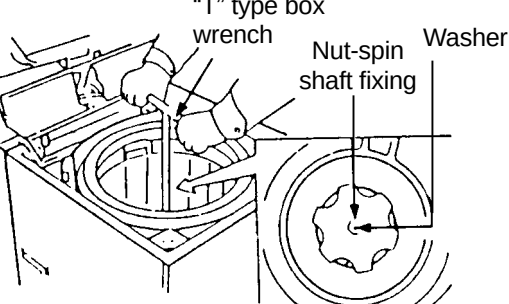
- Raise the top plate on the outer cabinet.
- Loosen four screws mounting outer tub cover and remove outer tub cover from the tub ass'y.



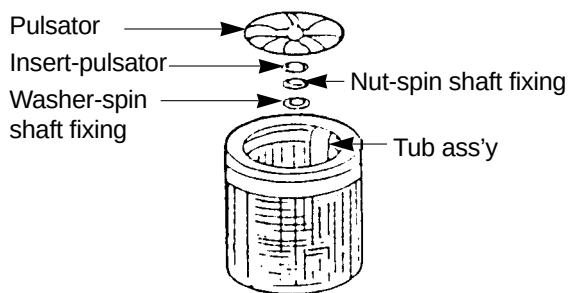
- Loosen the pulsator mounting screw and remove the pulsator.



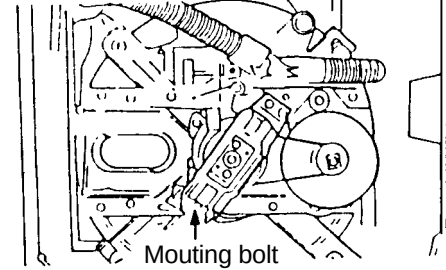
- Remove the spinner shaft flange nut by using 'T' type box wrench.



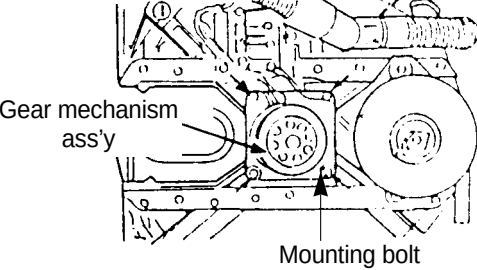
- Remove the tub ass'y.



- Lay the front of the washer on the floor.
- Remove four bolts mounting the plate-gear protect by using a box wrench and remove plate-gear protect.
- Remove the V-belt.

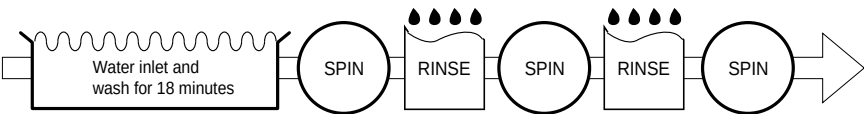


- Remove four bolts mounting the gear mechanism ass'y by using a box wrench.
- Pull out the gear mechanism ass'y.



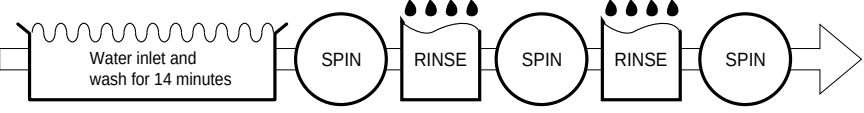
NOTE : To assemble the gear mechanism ass'y, reverse the disassembly procedure.

③ Procedure of Washing (Washing machine does it automatically).



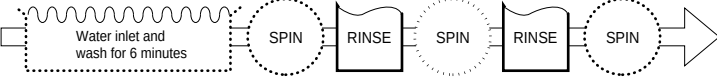
A blanket course's water flow R R L L R L

The washing program is processed by your desired items.



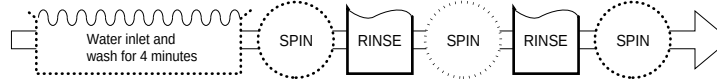
Artificial brain computer controls full procedure proper to wash load automatically.

Buzzer signal to notify you can put the sensible clothes into the diluted water with Dry-10.

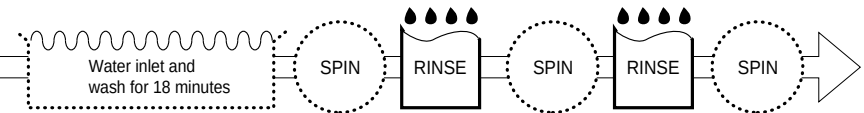
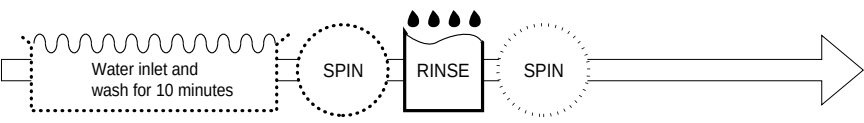


A part of dotted line is decreasing rotation velocity. Because protect clothes from damage.

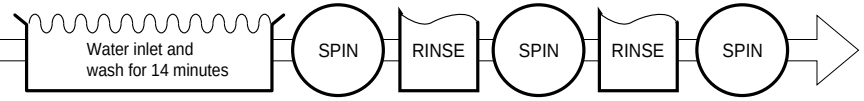
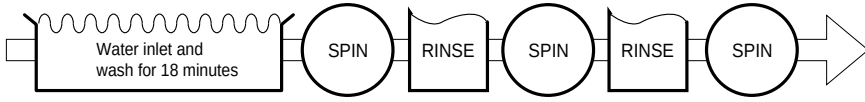
Buzzer signal to notify you can put the sensible clothes into the diluted water with Dry-10.



A part of dotted line is decreasing rotation velocity. Because protect clothes from damage.



A heavy course's water flow is R L R L R L



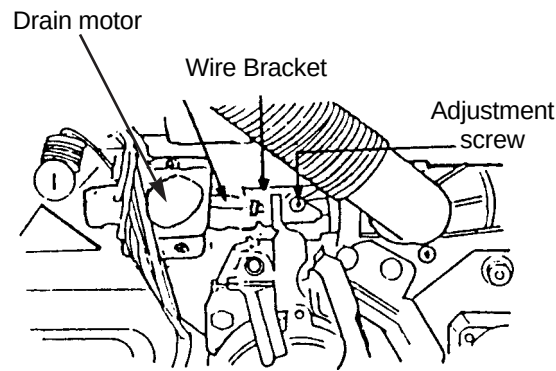
End of washing informed by buzzer.

After 10 minutes later from the end of the washing the power switch is turned off automatically.

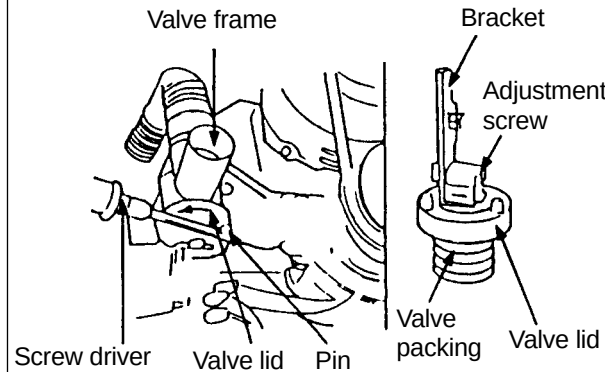
After Washing : Close the water tap and separate it from the inlet-hose.
If not so, the autovalve is out of order by the water pressure.
Take off plug.

DRAIN MOTOR AND VALVE

- Lay the front of the washer on the floor.
- Loosen the adjustment screw and four bolts mounting the drain motor.
- Take out the wire of drain motor from the bracket.

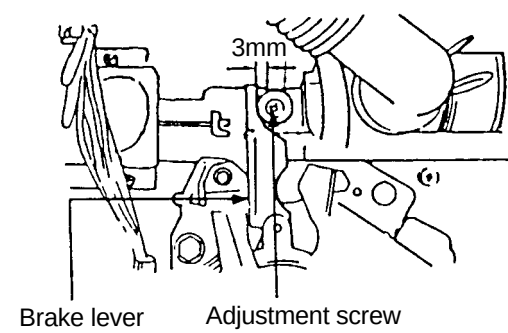


- Separate the drain motor from the bracket.
- Turn the valve lid by using screw driver as shown in figure and remove the valve lid from the valve frame.

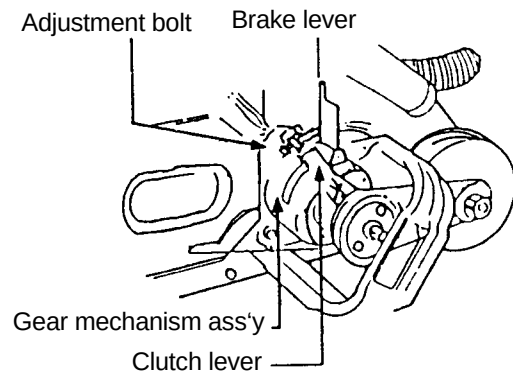


BRAKE ADJUSTMENT

- Loosen the adjustment screw fastening the bracket and place the adjustment screw to the brake lever as shown in figure.
- Tighten the adjustment screw completely.



- Loosen the adjustment bolt and turn the adjustment bolt until the end of the bolt touches to the brake lever.
- Tighten the lock nut and apply a small amount of paint-lock.



NOTE :

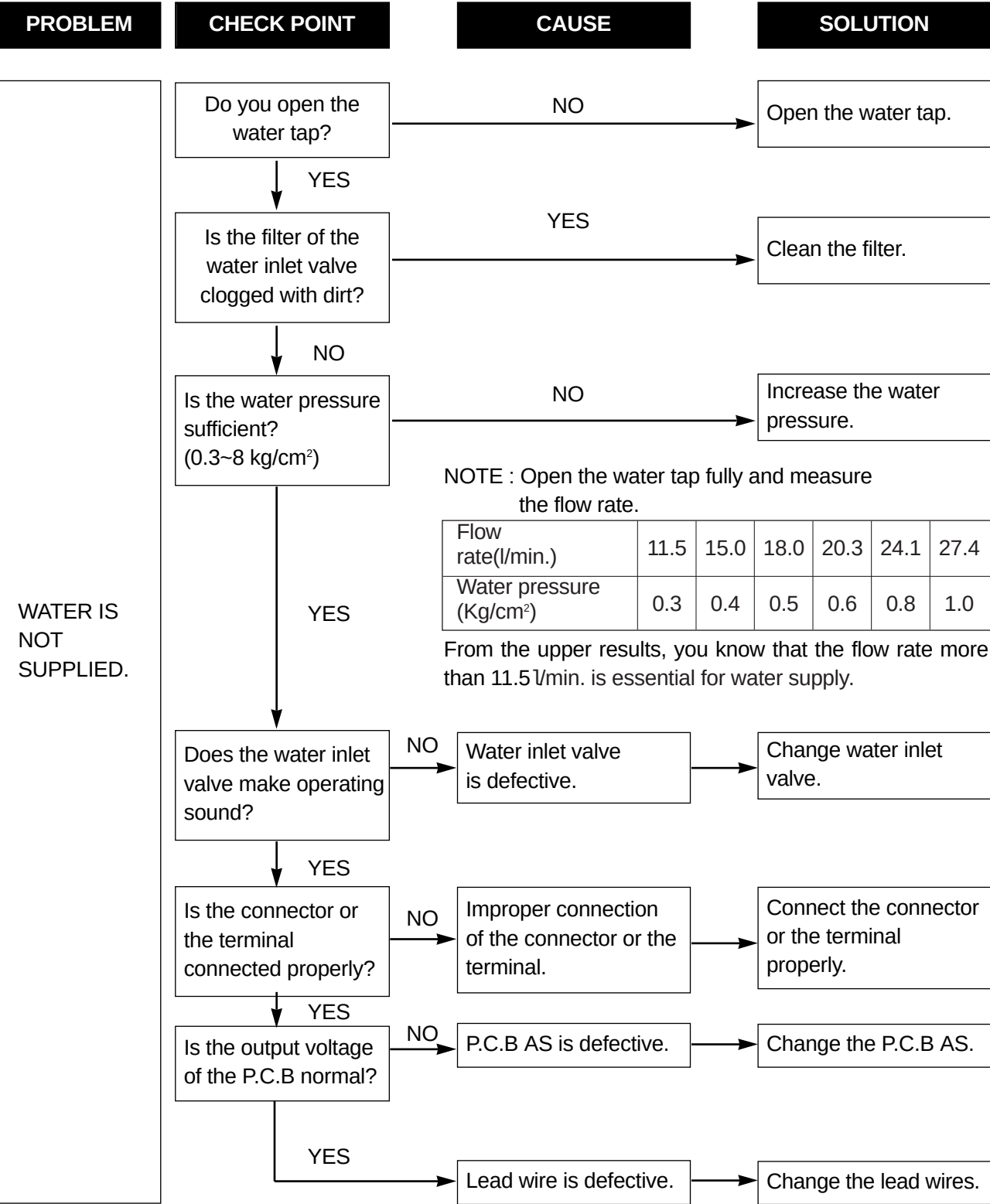
1. The brake adjustment has been made at the factory, so that it is not to re-adjust. However, in case of insufficient brake operation, perform the upper procedure.
2. Overtightening of the adjustment bolt will cause poor brake performance.
3. Undertightening of the adjustment bolt will cause continuous bracking and, thereby, cause the problems of the motor during the spin cycle.

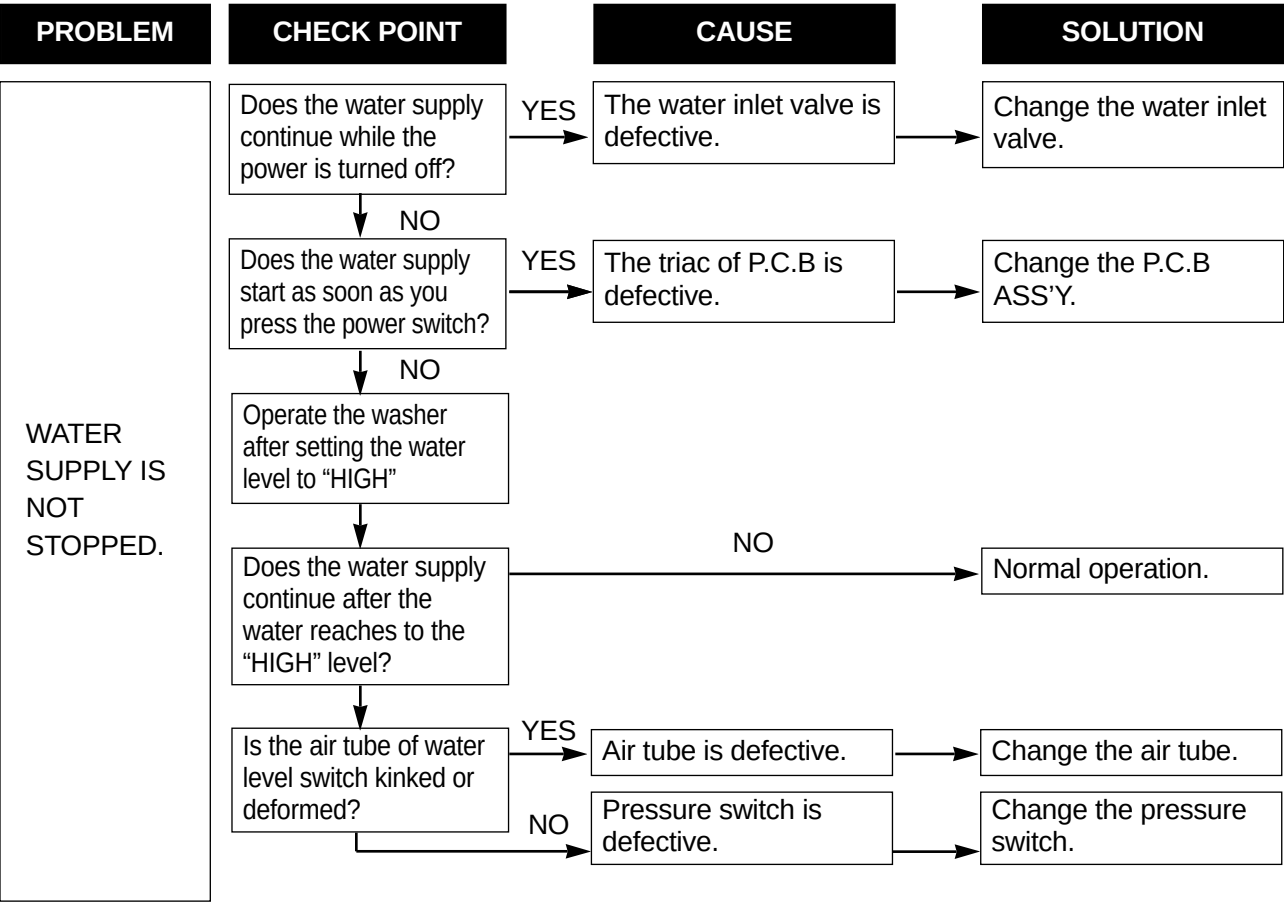
8. TROUBLE SHOOTING GUIDE

NOTES :

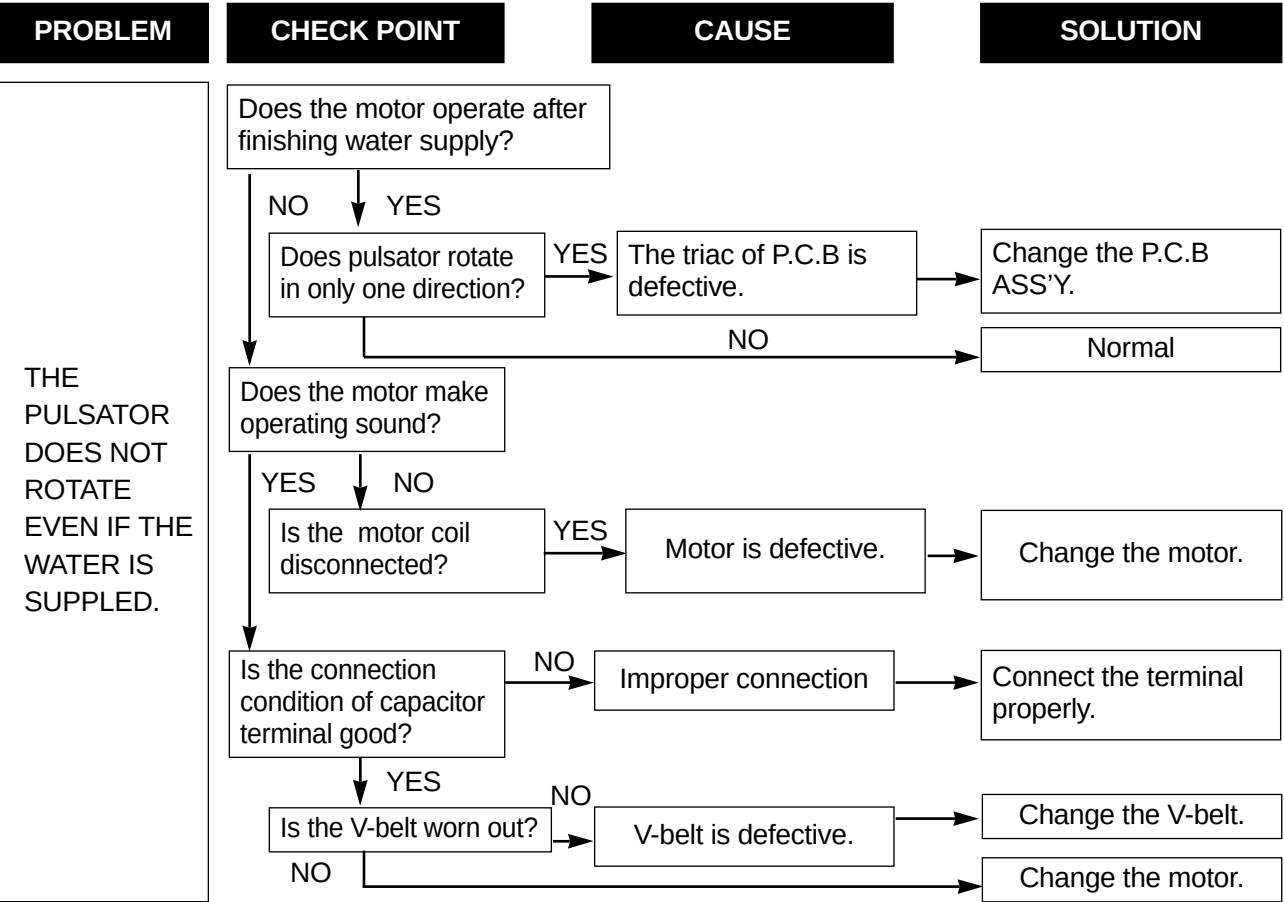
1. When replace the P.C.B. ASS'Y do not scratch the surface of the P.C.B. ASS'Y.
2. Disconnect the power cord from the electric outlet.

CONCERNING WATER SUPPLY

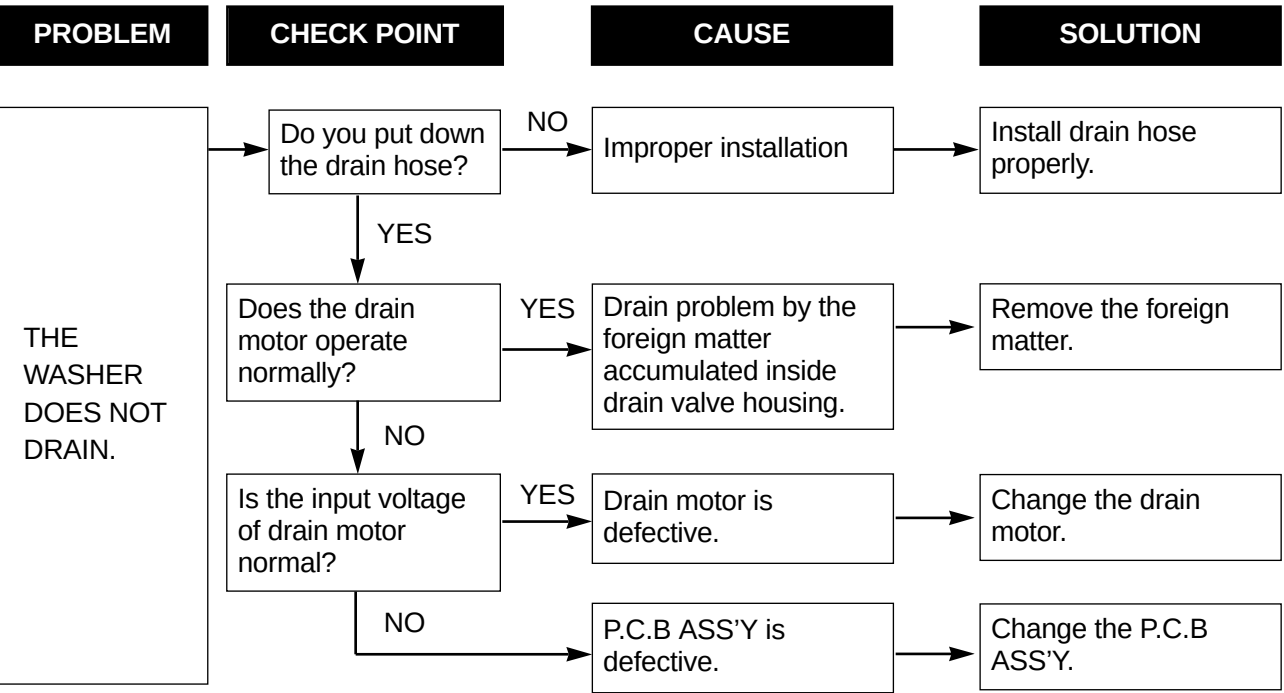




CONCERNING WASHING



CONCERNING DRAINING



CONCERNING SPINNING

PROBLEM	CHECK POINT	CAUSE	SOLUTION
THE WASHER DOES NOT SPIN.	Is the lid open?	YES	Close the lid.
	Does the door switch operate normally?	Door switch is defective.	Change the door switch.
	Does the safety switch operate normally?	NO Safety switch is defective.	Change the safety switch.
	Is the connector of P.C.B ASS'Y connected properly?	NO Improper connection of the connector.	Connect the connector properly.
		YES P.C.B. ASS'Y is defective.	Change P.C.B ASS'Y.
	Does the pulsator rotate while the tub does not rotate?	NO	Is the input voltage of the drain motor normal?
		YES	
		YES Drain motor is defective.	Change the drain motor.
		NO P.C.B ASS'Y is defective.	Change the P.C.B ASS'Y.
	Is the V-belt worn out?	YES V-belt is defective.	Change the V-belt.
		NO	Is the input voltage of motor normal?
		YES Motor is defective.	
		NO	Is the connection condition of capacitor terminal good?
		NO Improper connection.	
		YES P.C.B ASS'Y is defective.	Change the P.C.B ASS'Y.

CONCERNING OPERATION

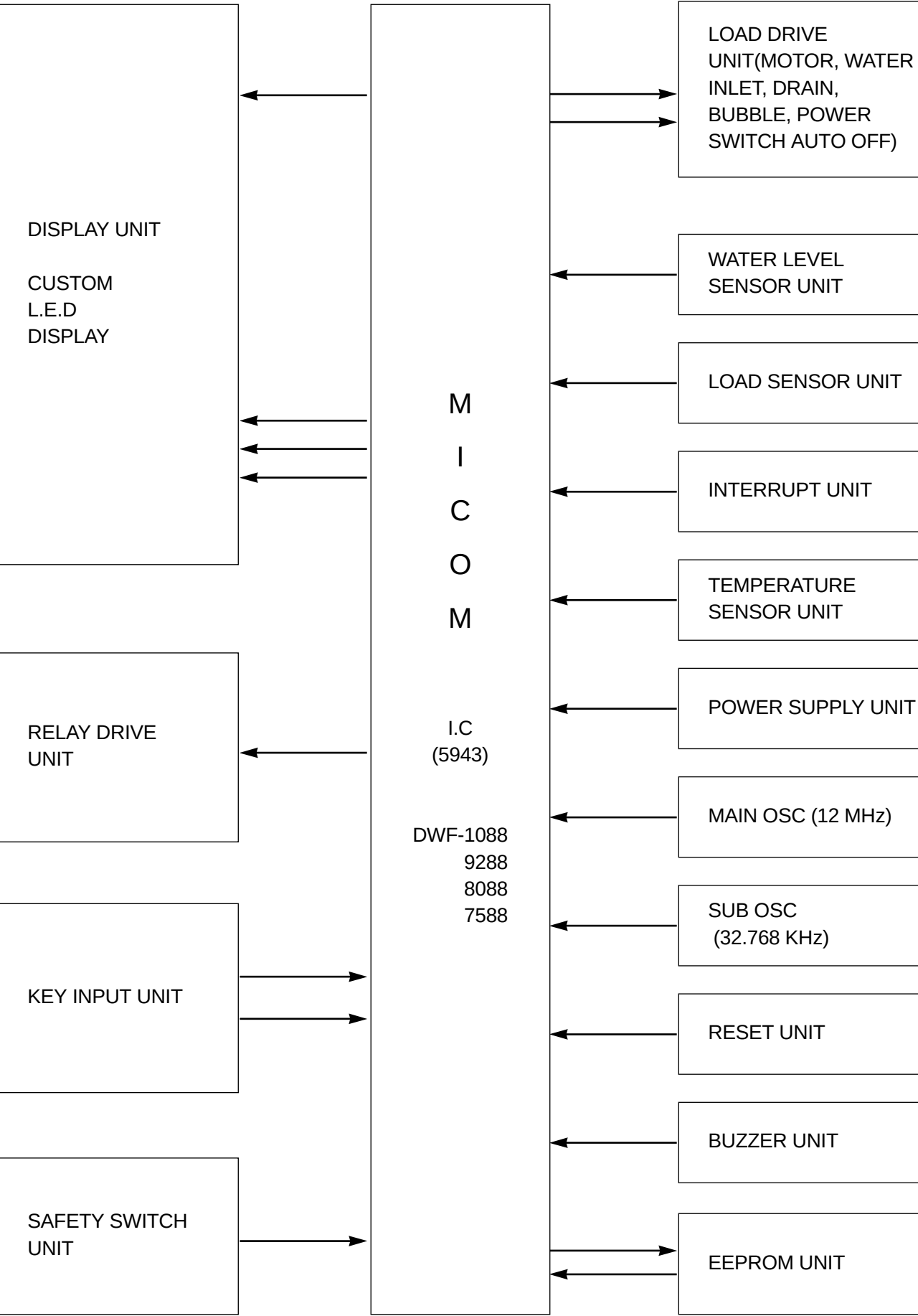
PROBLEM	CHECK POINT	CAUSE	SOLUTION
THE INDICATOR LAMP(L.E.D) DOES NOT LIGHT UP WHEN THE POWER BUTTON IS PRESSED.	Is the plug connect- ed to electric outlet?	NO	Connect the plug.
	Is the condition of power button good?	NO Power button is defective	Change P.C.B ASS'Y.
	Is the connector of the P.C.B. ASS'Y connected properly?	NO Improper connection of the connector.	Connect the connector properly.
	Is input voltage of the transformer normal?	NO Transformer is defective	Change the transformer.
		NO P.C.B. ASS'Y is defective.	Change P.C.B ASS'Y.
PROGRESS LAMPS(LED) DO NOT LIGHT UP.	Do you press START/HOLD button?	NO	Press START/HOLD button.
		YES P.C.B ASS'Y is defective.	Replace P.C.B ASS'Y.
MOTOR ROTATES WHEN START/HOLD BUTTON IS NOT PRESSED.	Does the pressure switch operate normally?	NO Pressure switch is defective.	Change the pressure switch.
	Check the output voltage of P.C.B ASS'Y	Abnormal P.C.B ASS'Y is defective	Change P.C.B ASS'Y.
ABNORMAL NOISE DURING WASH PROCESS.	Is the strange noise generated when the pulsator rotates in TEST MODE of P.C.B ASS'Y?	YES There is foreign matter between pulsator and tub.	Remove the foreign matter.
	Is the V-belt worn out?	YES V-belt is defective.	Change the V-belt.

9. PRESENTATION OF THE P.C.B ASS'Y

CONCERNING ERROR MESSAGE

MESSAGE	CAUSE	SOLUTION
	Improper installation of drain hose.	Install drain hose properly.
	The drain hose is blocked up by foreign matter.	Remove foreign matter from drain hose.
	Drain motor is inferior.	Change drain motor.
	The water tap is closed.	Open the water tap.
	The water inlet filter clogged.	Clean the water inlet filter.
	It passes over the 30 minutes, yet it doesn't come to assigned water level.	Check whether or not is comes to the assigned water level.
	Wash loads get uneven during spin.	Re-set wash loads evenly.
	Poor installation of the unit.	Proper installation.
	The lid is opened.	Close the lid.
	The safety switch is inferior.	Change the safety switch.
	The load sensing is inferior. After the load sensing operates about 20 seconds, the message is displayed during 0.5 second and water level is always fixed 'high'.	Change the P.C.B. ASS'Y.
	The water level sensing is inferior.	Check the water level sensor and the contact part of the connector.
	This condition shows that (S/H) button is pressed with the door being open after reservation washing time is set.	Close the door.

CONFIGURATION OF FULL CIRCUITS



MINUTE EXPLANATION DIAGRAM FOR EACH PARTS
MICOM IC (64 DIP)

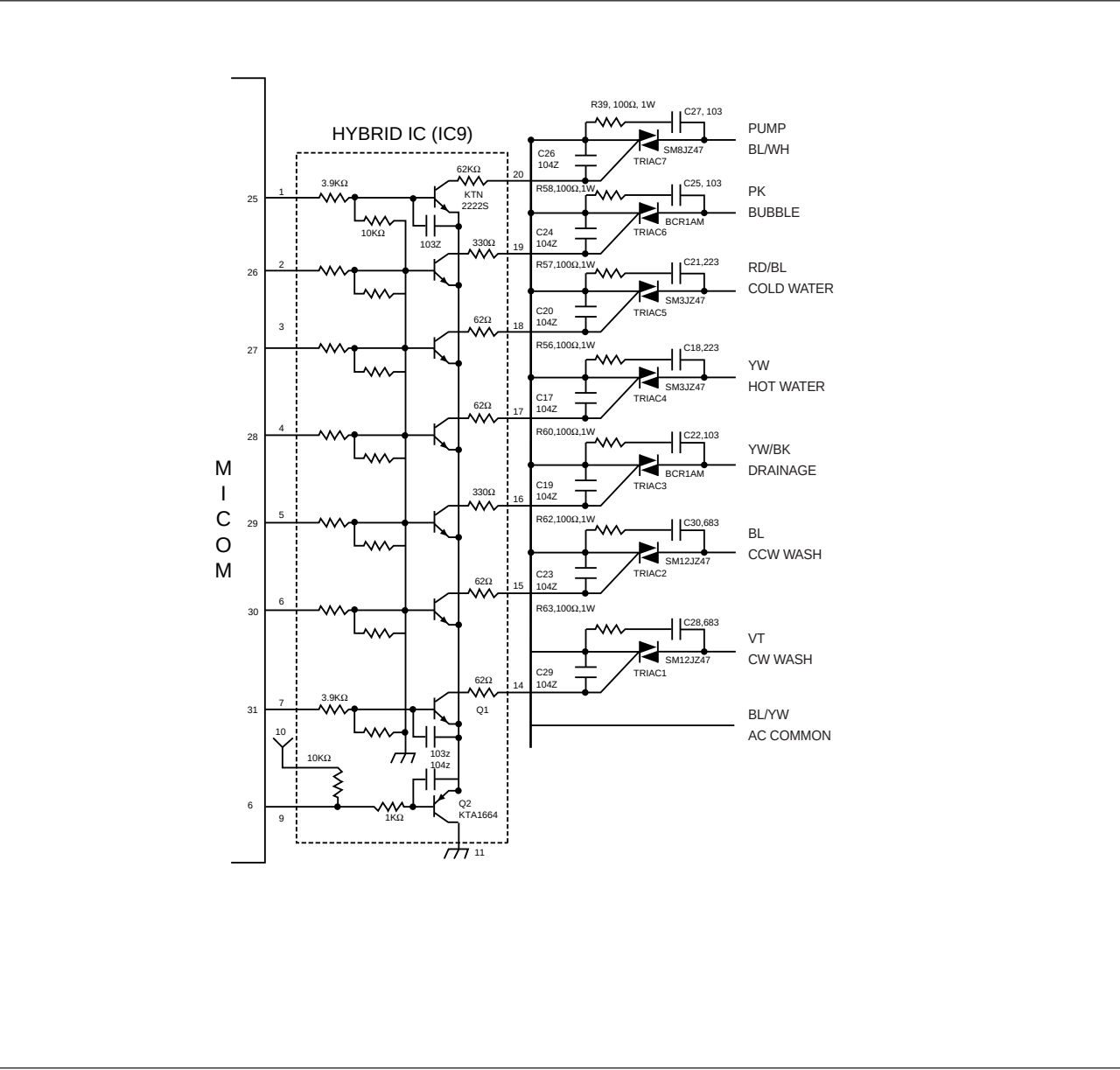
P10/S00	1		64	P07
P11/SI0/SB0	2		63	P06
P12/SCK0	3		62	P05
P13/S01	4		61	P04
P14/SI1/SB1	5		60	P03
P15/SKC1	6		59	P02
P16/BUZ	7		58	P01
P17/PWM	8		57	P00
TEST1	9		56	S29
RES	10		55	S28
XT1	11		54	S27
XT2	12		53	S26
VSS	13		52	S25
CF1	14		51	S24
CF2	15		50	S23
VDD	16		49	S22
P80/AN0	17		48	S21
P81/AN1	18		47	S20
P82/AN2	19		46	S19
P83/AN3	21		45	S18
P7/INT0	21		44	S17
P71/INT1	22		43	S16
P72/INT2/T0IN	23		42	VP
P73/INT3/T0IN	24		41	VDDVPP
S0/T0	25		40	S15/T15
S1/T1	26		39	S14/T14
S2/T2	27		38	S13/T13
S3/T3	28		37	S12/T12
S4/T4	29		36	S11/T11
S5/T5	30		35	S10/T10
S6/T6	31		34	S9/S9
S7/T7	32		33	S8/T8

LC866020Y
SANYO

ROM : 16384X 8 bit
RAM : 384X 8 bit

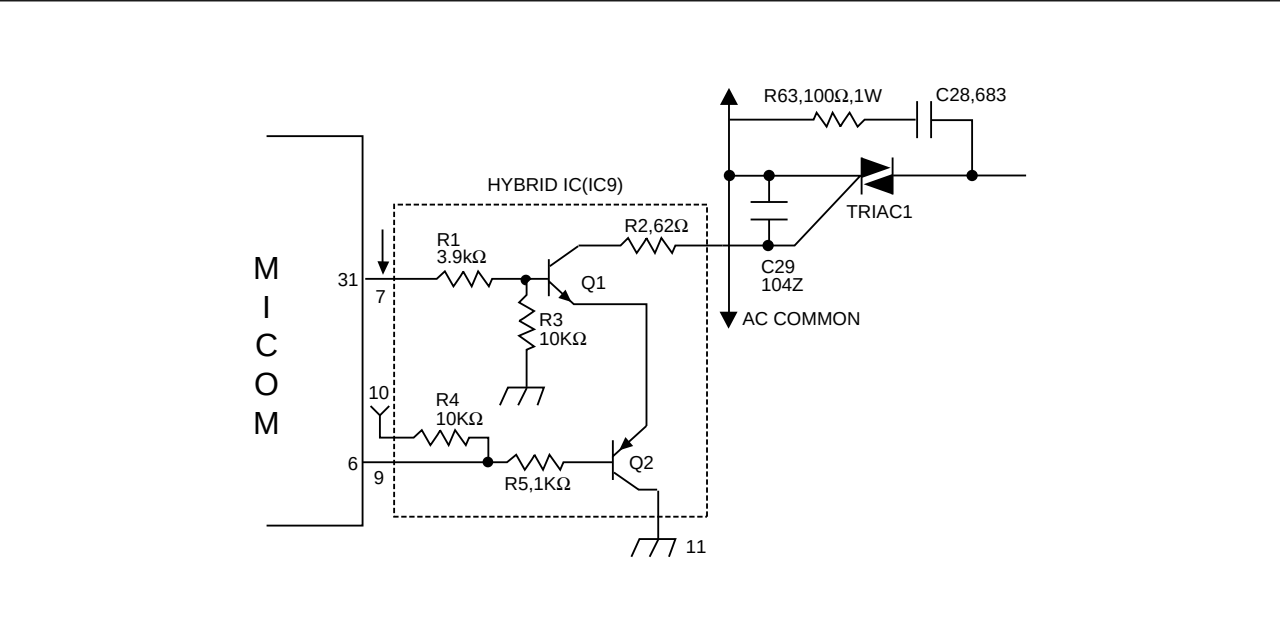
LOAD DRIVE UNIT
(cw wash, ccw wash, drainage, hot water, cold water, bubble)

1) CIRCUIT DIAGRAM AND EXPLANATION

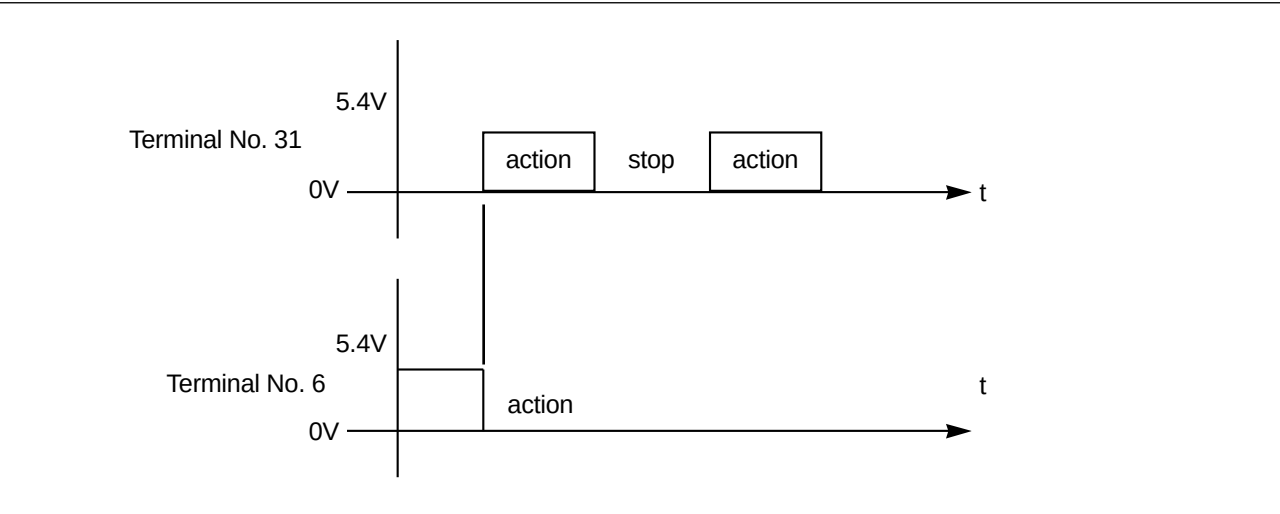


- Controlling load of button input in MICOM terminal, it is selected to 'L' or 'H'. It is selected to 'H' in running load case and in 'L' case, load driving is finished, In clockwise rotation of washing motor, as MICOM No. 31 is changed 0V to 5.4V, TR Q1(KTN2222S) is turn on. And then, the TRIAC1(SM 12JZ47) is turn on, the source of electric power is supplied to washing motor for clockwise rotation.The TRIAC as switching element, force to 'ON' or 'OFF' by use of the Q1 (KTN2222S) in the rest loads, when the MICOM terminal voltage change 0V to 5.4v, each TRIAC DRIVE TR is active, and then TRIAC switches the source of electric power to loads.
- The purpose of using the MICOM terminal No. 6 Q2(KTA 1664) is that the Q2 prevents the instant supply of electric power supply to loads, in case MICOM's action is wrong by means of pushing initial power switch.

2) DETAIL EXPLANATION OF CIRCUIT ACTION (ACTION OF CW WASH)



- In case MICOM terminal No. 31 is 'H' and No. 6 is 'L' the Q1 (KTN2222S) & the Q2 (KTA1664) turn on and control the TRIAC. The resistance, as 62Ω & 1/2W, of the R52 is used to limit the GATE current of the TRIAC.
- The resistance R1(3.9KΩ, 1/4W) and the R5(1KΩ, 1/4W) control the base current of the Q1 & Q2 in order as TR forces to turn on sufficiently.
- The ceramic condenser C29 between the T1 and the GATE of the TRIAC8 is used for preventing the wrong action by means of the noise.
- The R63(100Ω, 1W) and C28(683K) between the T1 and T2 of the TRIAC is used for protecting the TRIAC, it usually called SNUBBER CIRCUIT.
- The waveform of MICOM No. 31 & 6.



3) CAUTION AND CHECKING FOR A/S

- If load is active as soon as the power switch is 'ON', check the driving TRIAC of load.

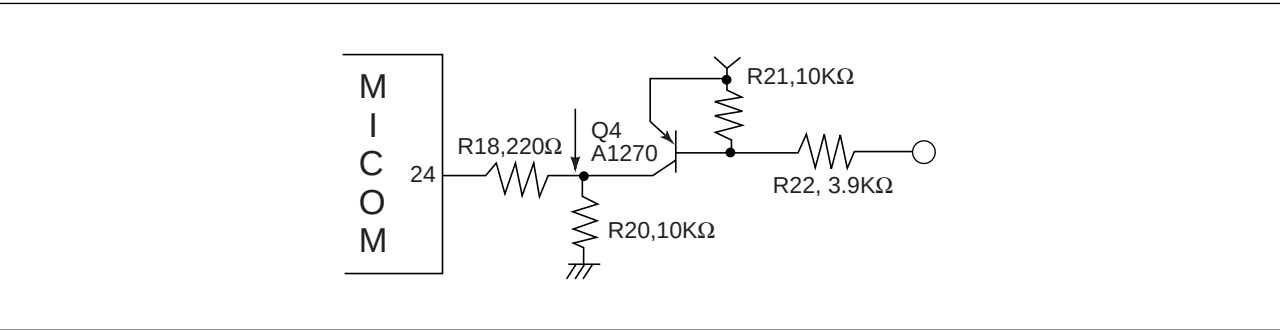
SM12JZ47(12A), SM8JZ47(8A), SM3JZ47(3A)		BCR1AM-12L	
shape 	• CHECK the resistance of the T1 & T2 of TRIAC. ($\infty\Omega$). • CHECK the total parts without fail, in case the TRIAC has a short circuit.	shape 	• CHECK the resistance of the T1 & T2 of TRIAC. ($\infty\Omega$). • CHECK the total parts without fail, in case the TRIAC has a short circuit.

- Check the MICOM output terminal, if the load doesn't act although the TRIAC isn't anything wrong.
- Soemtimes it is happened that TRIAC DRIVE TR has circuit or an open circuit. In this case, being measured the resistance between the TR E & C with tester, the resistance value should be near the $\infty\Omega$. If not, the DRIVE TR is out of order.
- If the ceramic condenser(C17, C19, C20, C23, C24, C29) using by protecting the noise between the GATE & T1 of each TRIAC has a short circuit, it has no voltage drop between the T1 and GATE. Therefore, the TRIAC is not turn on.
- If MICOM terminal No. 6 is not active from 5.4V to 0V, all DRIVE TR of the TRIAC are not turn on. Therefore, the TRIAC is not out of order, to begin with, check the micom terminal No. 6 and TR Q2(KTA 1664) necessarily.
- The TRIAC's names and values of the snubber & resistance of the total parts.

LOAD	TRIAC'S NAME	GATE'S RESISTANCES OF LIMITED CURRENTS	VALUES OF THE SNUBBER	RESISTANCES OF TOTAL PARTS
CW WASH	SM12JZ47 BCR12PM-14L	62Ω, 1/2W	100Ω, 1W+683K AC 250V	
CCW WASH	SM12JZ47 BCR12PM-14L	62Ω, 1/2W	100Ω, 1W+683K AC 250V	
DRAINAGE	BCR1AM-12L	330Ω, 1/4W	100Ω, 1W+103K AC 250V	
HOT & COLD WATER	SM3JZ47	62Ω, 1/2W	100Ω, 1W+223K AC 250V	
BUBBLE GENERATOR	BCR1AM-12L	330Ω, 1/4W	100Ω, 1W+103K AC 250V	
PUMP	SM8JZ47 BCR8PM-14L	62Ω, 1/2W	100Ω, 1W+103K AC 250V	

WATER LEVEL SENSOR UNIT

1) CIRCUIT DIAGRAM



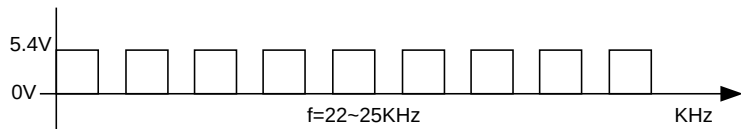
2) EXPLANATION OF CIRCUIT

- Push the power switch. And, in order to carry on the action of course selection, input the selection of frequency according to each water level selection.
- The frequency of water level sensor in each water level becomes square wave and is sended to the MICOM.

WATER LEVEL NAME	FREQUENCY	WATER LEVEL	DWF-7588	DWF-9288	DWF-1088
HIGH	22.52KHz	400±15	80L	98L	96L
MIDDLE	23.04KHz	340+10, -15	68L	78L	81L
LOW	23.56KHz	280±15	55L	61L	65L
SMALL	24.05KHz	220±15	42L	48L	49L
E.SMALL	24.33KHz	180±15	30.5L	33L	36L
RESET	25.02KHz	60 ±20			
0	25.40KHz				

If the water level is selected 'HIGH' in washing, water supply proceeds until inputing the frequency 22.70 KHz of 'HIGH' in the MICOM terminal No. 24. Being finished the water supply, washing process is proceeded. After the washing process, water level reaches to RESET point, and then after the (D) + 60 seconds, the spin process begins.

- The value of the frequency between the MICOM terminal No. 24 and the GND.

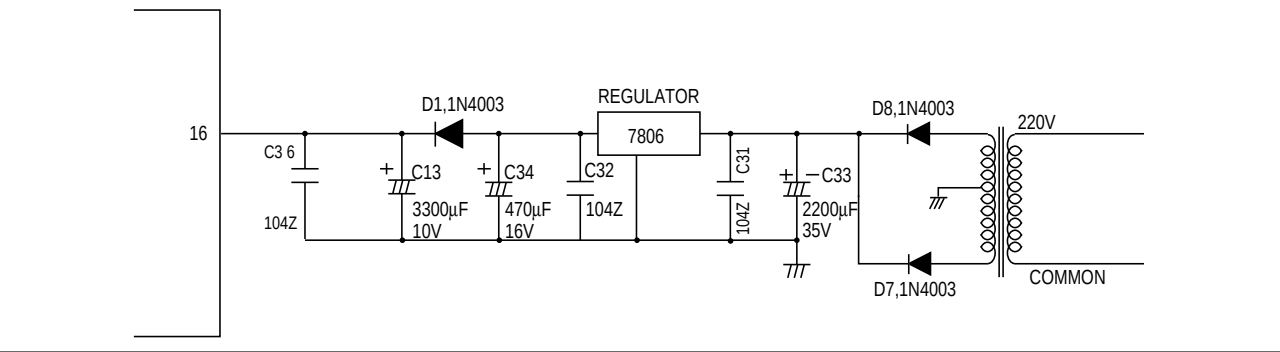


3) CAUTION FOR A/S

- The output of the frequency in the WATER LEVEL SENSOR varies in accordance with temperature and using condition. If it doesn't input the output of the WATER LEVEL SENSOR in the MICOM, the error message is displayed as 'E9'. In case of proceeding the water supply continuously in 'HIGH' water level, it is desirable to change the WATER LEVEL SENSOR because of the defect in the WATER LEVEL SENSOR.
- Check the TR Q4(A1270Y)
- Being checked with tester, the value of the voltage reaches about 4V.
- As the frequency is low, the water level is higher.

ELECTRIC POWER SUPPLY UNIT

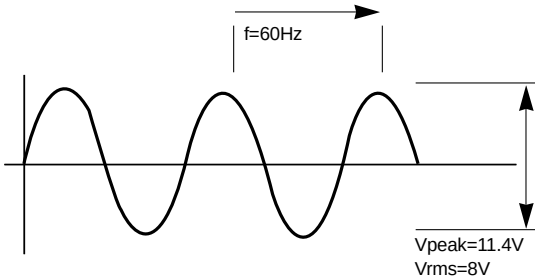
1) CIRCUIT DIAGRAM



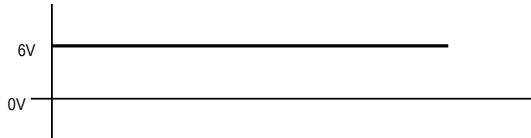
2) EXPLANATION OF CIRCUIT

- The primary voltage of the transformer sets 220V, the secondary voltage of the transformer is full wave rectified by use of the D7 (1N4003) & D8(1N4003).

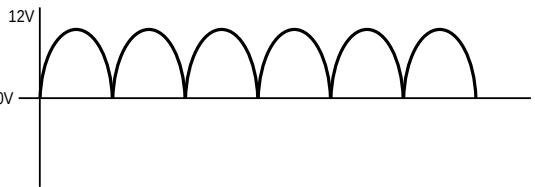
① The gray & red (The waveform in secondary part of the transformer)



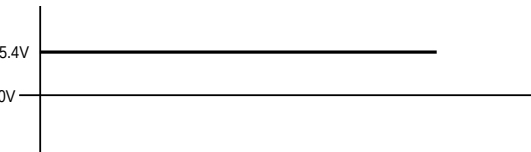
④ The waveform of output in the REGULATOR I.C 7806.



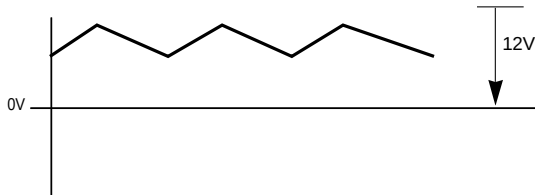
② Measuring the wave form in case of the removing condenser by the removal ripple C33



⑤ The waveform after passing the D2.



③ It is removed the ripple with attaching the C33(2200μF).

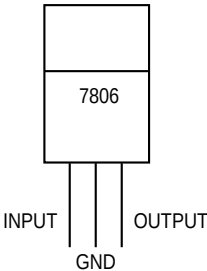


- The Electrolytic condenser C13(3300μF, 10V) and diode D2 is used in order that at instant power supply failure circuit should remember the contents of the program. It happens that the MICOM terminal NO, 16 has instant interruption of electric power, yet the MICOM is not discharged electricity because of the diode D2.
- The measurement of voltage is as follows.

	① EFFECTIVE VALUE	②	③	④	⑤
82.5V	5.2V	7.9V	7.9V	5.97V	5.4V
110V	7.2V	11V	11V	5.97V	5.4V
137.5V	9.3V	14.1V	14.1V	5.98V	5.4V
165V	5.3V	7.6V	7.6V	5.96V	5.4V
220V	7.6V	10.6V	10.6V	5.98V	5.4V
275V	9.7V	13.7V	13.7V	5.98V	5.4V

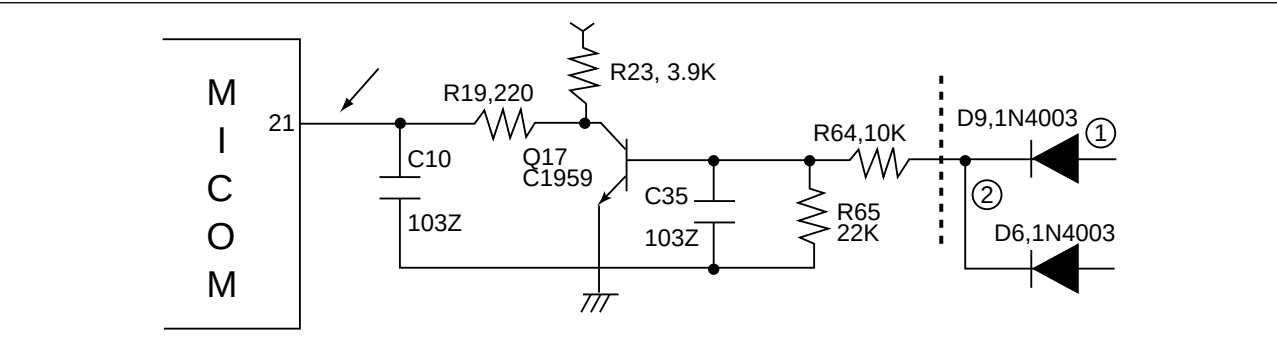
3) CAUTION FOR A/S

- Measure the voltage of input terminal REGULATOR I.C of 7806 with tester. And, compare the measuring value with the voltage table.
- Check the condenser in case the electrolytic condenser and ceramic condenser have short circuit. The reason is that it happens no electric power supply.



INTERRUPT UNIT

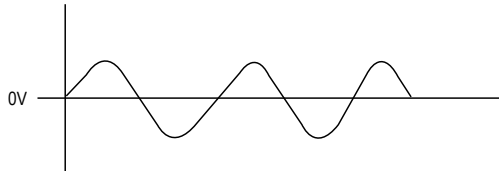
1) CIRCUIT DIAGRAM



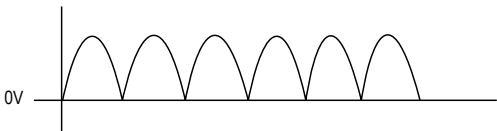
2) EXPLANATION OF CIRCUIT

The INTERRUPT UNIT is necessary to reduce the generation of surge, by use of being voltage 'ON' from the zero voltage.

- The waveform of the part ①



- The waveform of the part ② (in case of cutting the part of the dotted line)



- After connecting the part of the dotted line & waveform measurement
- The waveform measurement in the MICOM No. 21



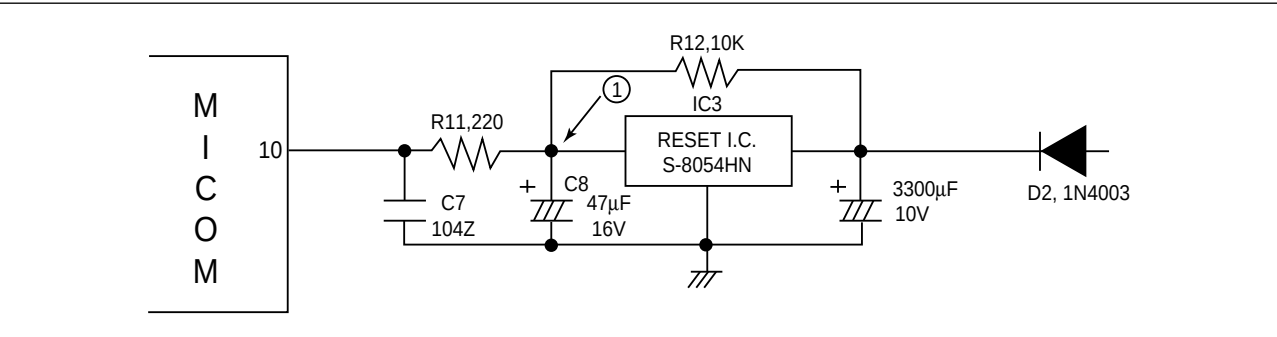
The waveform of the secondary part in transformer passes through the diode D6, D9(1N4003), and then the voltage is divided by means of the resistance R64 & R65. This voltage gives force to input the pulse to the MICOM terminal No. 21 on the ground of action of the TR Q17(C3202Y).

3) CAUTION FOR A/S

- The phenomenon of no electric power supply happens, to begin with check the electric power supply unit, and then check the INTERRUPT UNIT. It is desirable to measure the Q17(C3202Y) with tester and the C10(C103Z).

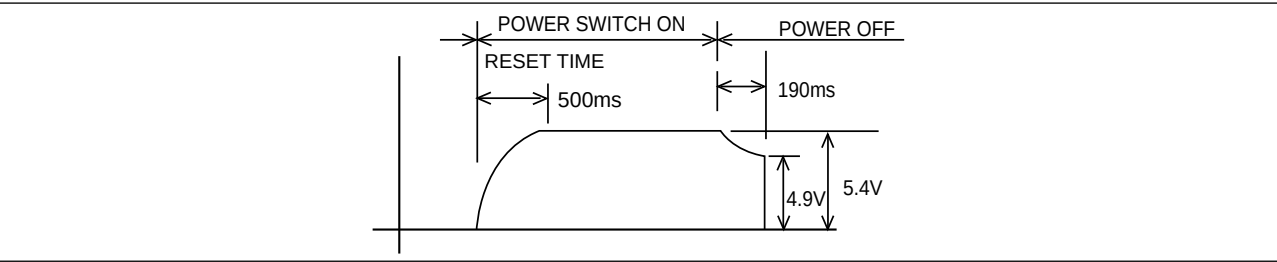
RESET UNIT

1) CIRCUIT DIAGRAM



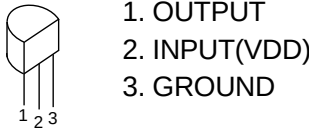
2) EXPLANATION OF CIRCUIT

- The RESET unit is a hardware circuit, of which all programs are initialized, when the power switch is 'ON', Here, the reason why uses RESET I.C. is that the RESET UNIT prevents the MICOM from incorrect action. Also, the R11 & C7(104Z) as a RC filter, is used in order to absorb the noise.
- The waveform measurement of the part ① with being 'ON' the power switch.



3) CAUTION FOR A/S

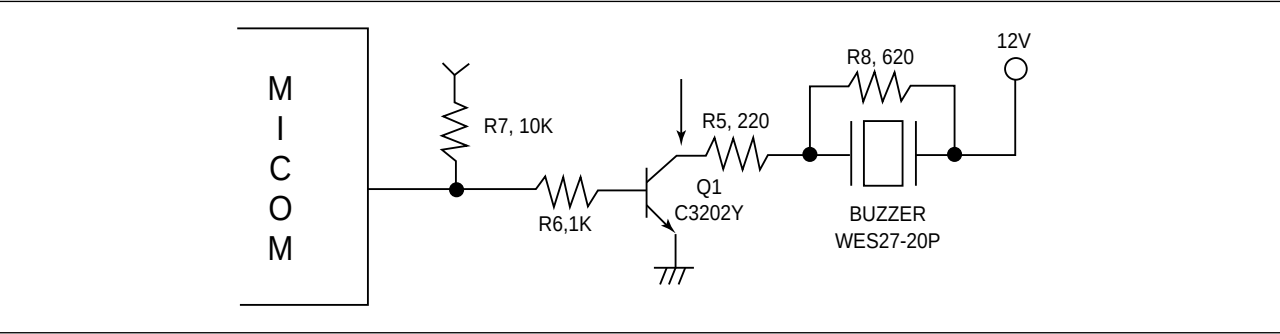
- Check the output of the RESET I.C. and judge whether or not it is something wrong,



- The R12 and C8 turn on the accurate RESET value with controlling the RC time constant.

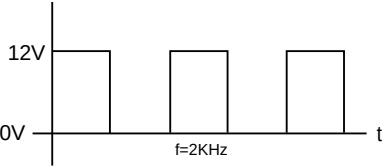
BUZZER UNIT

1)CIRCUIT DIAGRAM



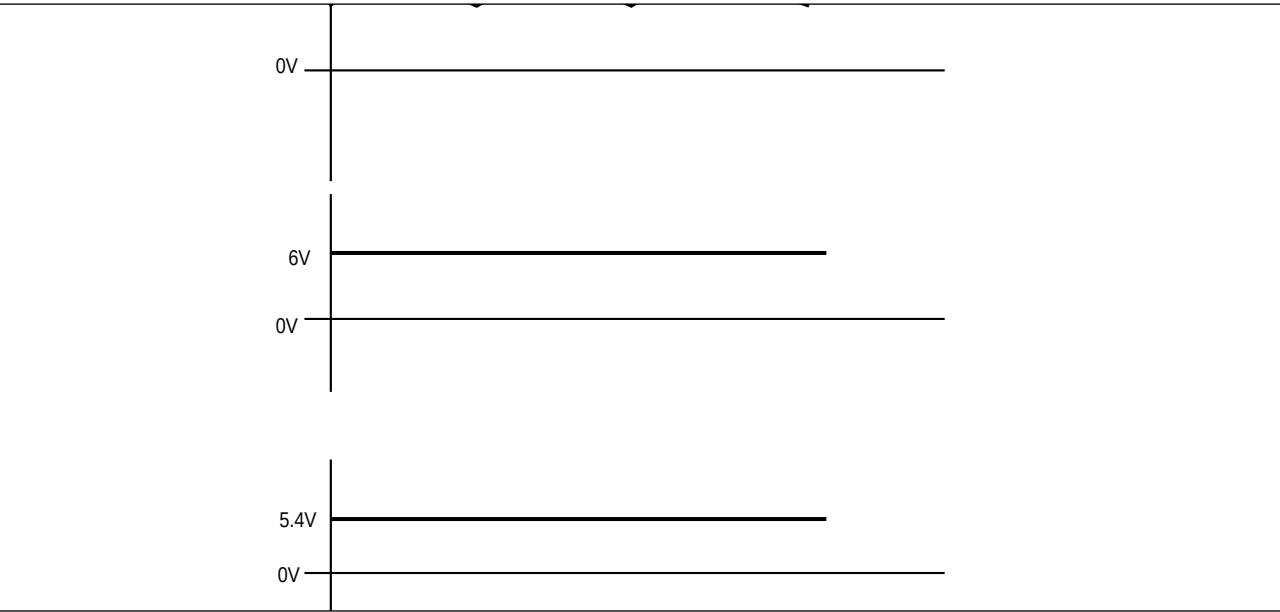
2) EXPLANATION OF CIRCUIT

- After the button action and total process ends, BUZZER is active.
- It is active directly with offering an output the frequency waveform of 2 KHz from the MICOM terminal No.7.
- The R7 is 'PULL UP' resistance, and the R8 is restrict resistor of the Q1 base current, and the R5 is resistance of excess current under phenomenon of short circuit, when the electric current changes abruptly according to the condenser component of piezoelectric element, and the R8 remove the phenomenon of abnormal oscillation by preventing the collector floating state of the Q1.
- The waveform in the part of the BUZZER DRIVE TR Q1 collector.

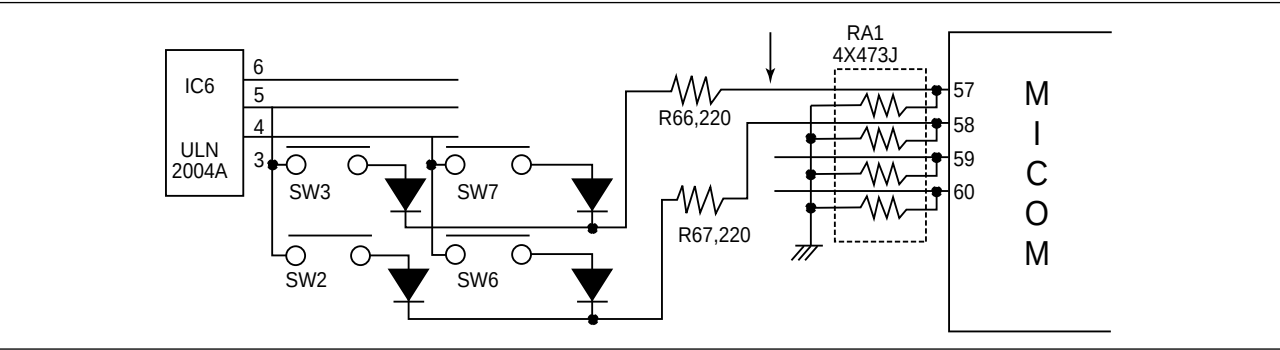


BUTTON INPUT UNIT

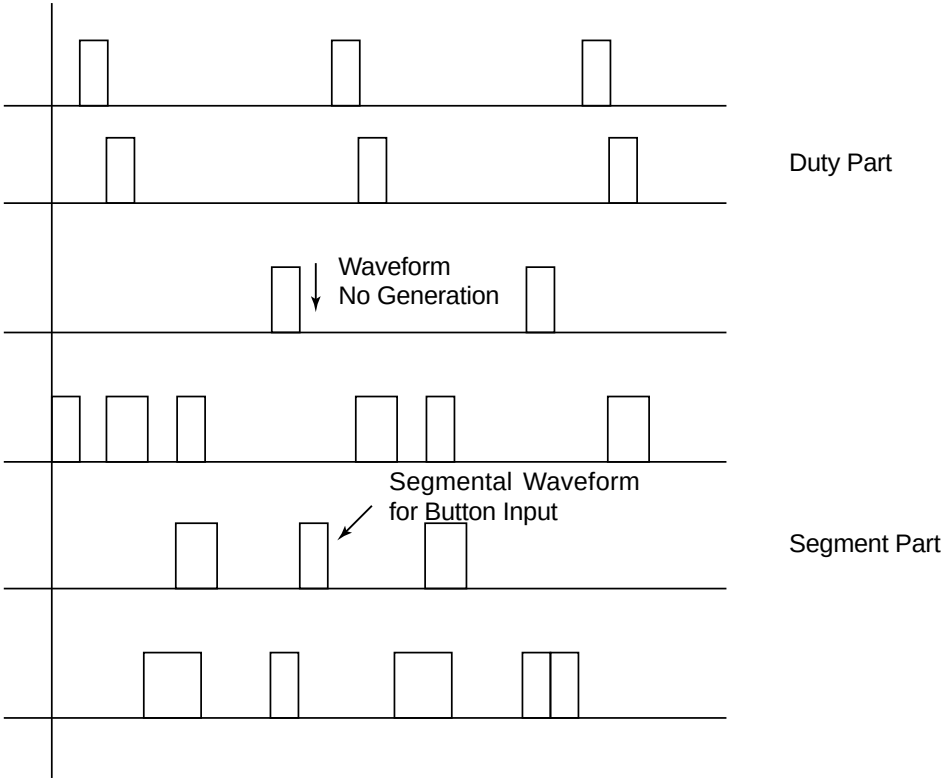
1) CIRCUIT DIAGRAM



• Part of the button scan



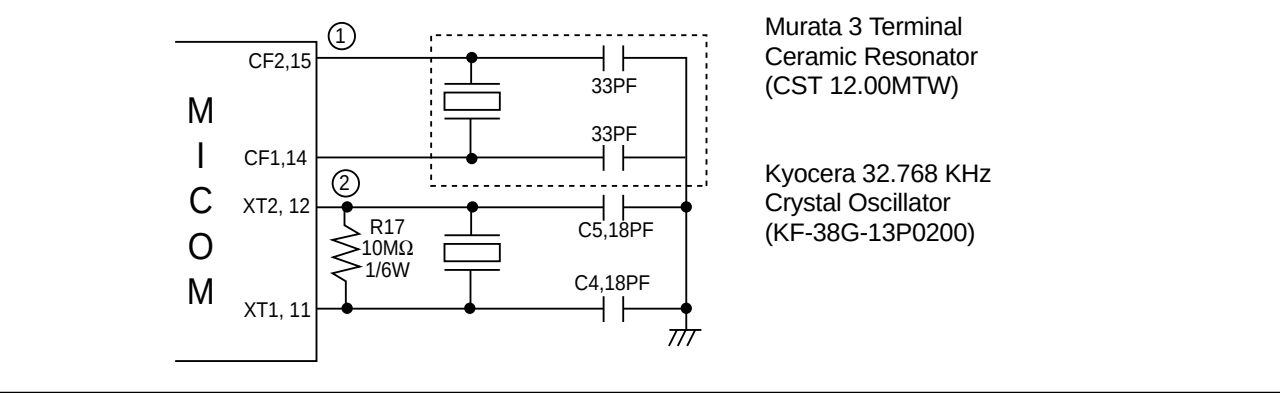
The system of the BUTTON SCAN is in wide use for the method of the DUTY output part in L.E.D DRIVE, yet here, it is in use for the method of the segmental output.



- Though the period of the DUTY part is 1/9, the last 9th part does not generate the waveform and checks the button input with getting out the segmental output at the same time.
- The RA1(473J, 47KΩ) is a 'PULL DOWN' resistance for preventing floating action.
- The D15 prevents the L.E.D from turning on unnecessarily with forming the closed loop like a threaden line at the time of button push.

OSCILLATION UNIT

1)CIRCUIT DIAGRAM



2)EXPLANATION OF CIRCUIT

- As the OSCILLATION UNIT is a basic part of the MICOM DRIVE. If the oscillation doesn't generate, we able to consider that the MICOM is destroyed.
- The waveform between the part of ① and the GND
- The waveform between the part of ② and the GND

- Specification of oscillator

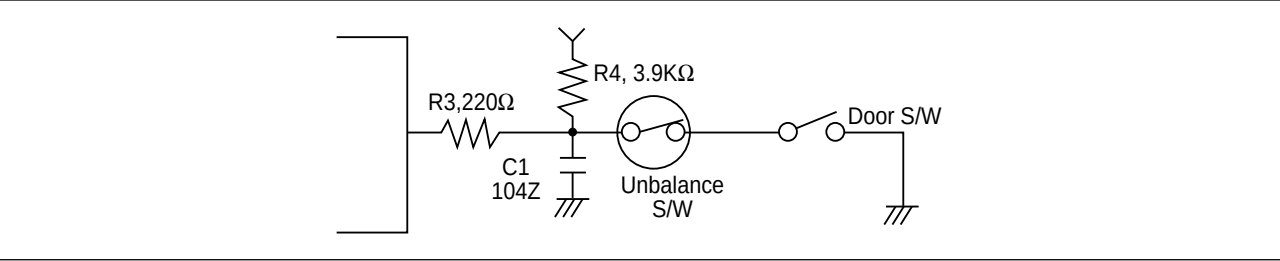
TYPE OF OSCILLATOR	MAKER	NAME OF OSCILLATOR	CONDENSER	
			C1	C2
12 MHZ CERAMIC RESONATOR	MURATA	CST 12.00 MTW	33 PF	33PF
32.768KHZ CRYSTAL OSCILLATOR	KYOCERA	KF-38G-13P0200	18PF	18PF

It is general use for the MICOM maker's recommendatory value of condenser which is fit for MICOM's characteristics.

- The R82(10MΩ, 1/6W) is in use to get rid of the initial abnormal oscillatory phenomenon of the 32.768 KHz crystal oscillator.

SAFETY SWITCH UNIT

1)CIRCUIT DIAGRAM

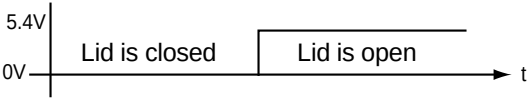


2) EXPLANATION OF CIRCUIT

- The MICOM terminal No. 63 gets into 'L' at the state of the closed lid. If lid is open in spinning state, the MICOM generates error signal as 'LE'.
- Case of range 40mSEC~300mSEC in spinning time: It is regarded that washing clothes should be inclined. Accordingly washing time increases 8 minutes and rinsing action takes place another one time. Case of above 300 mSEC : It is regarded that lid should be open. Therefore it is displayed as 'LE'.

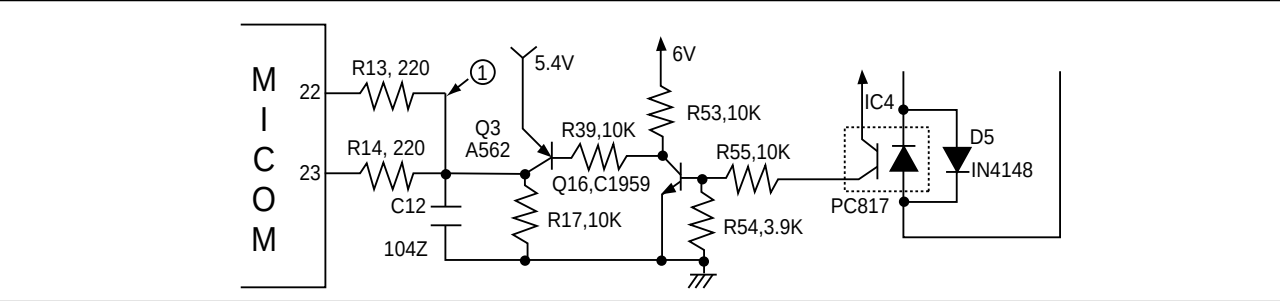
3) CAUTION FOR A/S

- Be level with the ground.
- The 'UE' error occurs in case of not being level with the ground.
- The waveform between the MICOM terminal No. 63 and the GND.



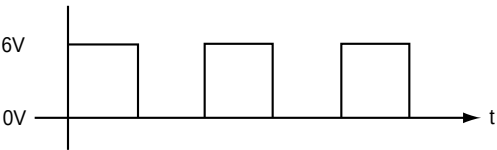
LOAD SENSOR UNIT

1) CIRCUIT DIAGRAM



2) EXPLANATION OF CIRCUIT

- Detecting the voltage of running condenser, it sends the sensing data to the MICOM terminal No. 22 & 23. That is, as charging & discharging time of runing condenser becomes different according to the loads, in fuzzy course the washing time is determined by sensing the quantity of washing clothes.
- The waveform between the part of ① and the GND(waveform of pulse).

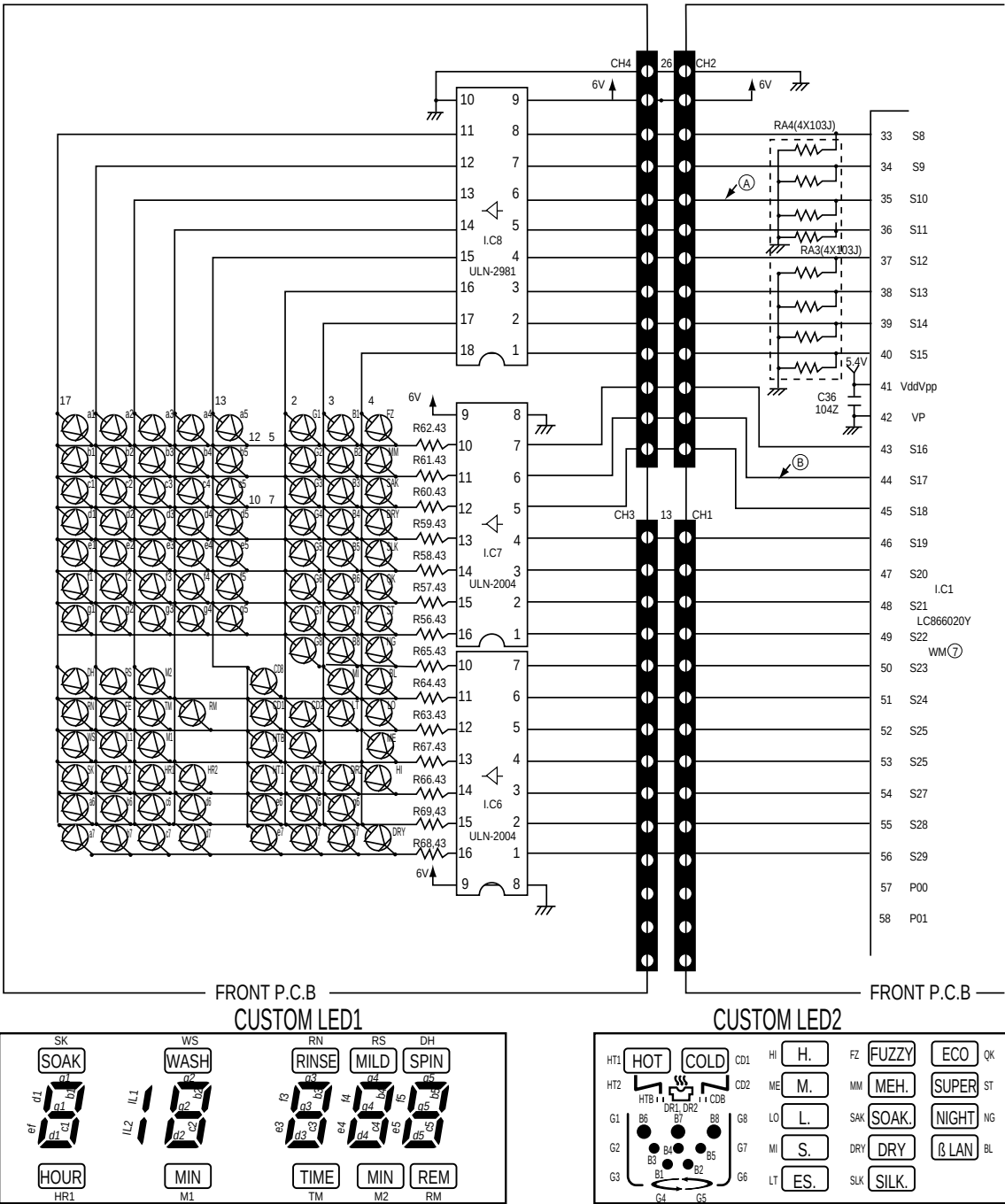


- The element which has an effect on data of LOAD SENSOR

CONDITION	SPECIFICATION
VOLTAGE	220V AC
CAPACITY OF CONDENSER	13.5μF
TENSION OF BELT	450gf

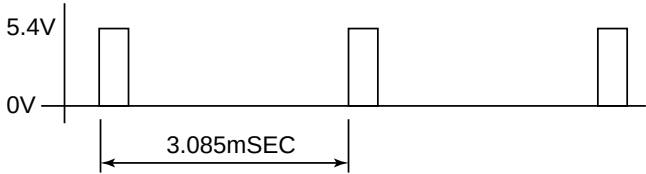
DISPLAY UNIT

1) CIRCUIT DIAGRAM

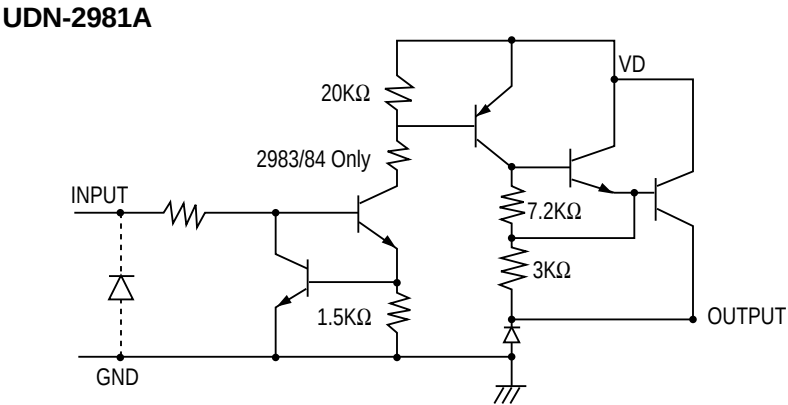
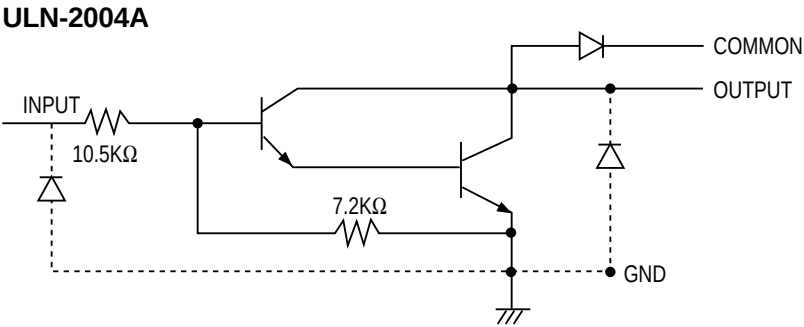


2) EXPLANATION OF CIRCUIT

- The MICOM terminal No. 33~40 amplifies the source current to produce the 'H' by use of the buffer UDX-2981A. And the MICOM terminal No. 43~54 sufficiently amplifies the sink current by use of the DRIVE I.C. ULN-2004A.
- The waveform between the part of ① and the GND(part of the DUTY)



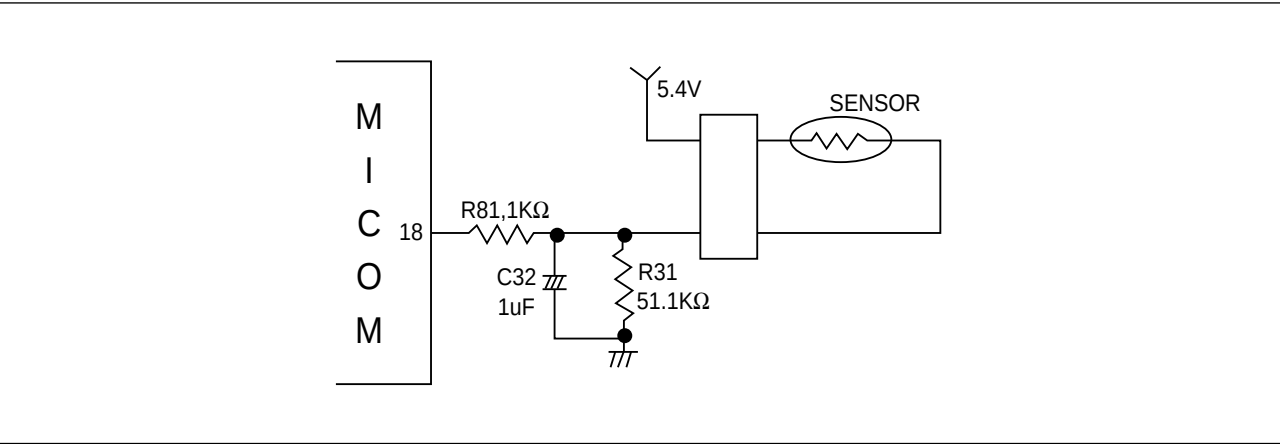
- The division rate of the DUTY is 1/9. And as part of the DUTY treats the black time between the square waves, it prevents the phenomenon of faint lighting of L.E.D unnecessarily due to the phenomenon of fold in delay time of the IC 8 between the input and output.
- The equivalent circuit of DRIVE IC & BUFFER IC



- If the light of the DISPLAY unit is does not appear, check the circuit using the oscilloscope.

TEMPERATURE SENSOR UNIT

1) CIRCUIT DIAGRAM



2) EXPLANATION OF CIRCUIT

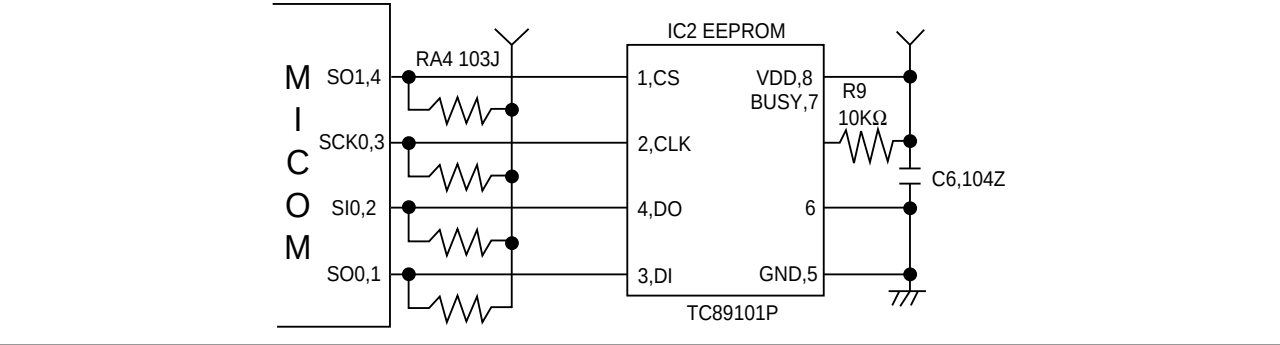
- To use resistor for temperature detection, the value of R43 was decided to the center value of temperature bandwidth (-20~70°C), that is, resistance of temperature sensor is 51.35 KΩ at 25°C. Therefore the value of R43 was decided to 51.5 KΩ, F(1%).
- C15 used electrolytic condensor (1μF) to remove noise and to stabilize the voltage.

3) CAUTION FOR A/S

1. HOW TO CHECK TEMPERATURE SENSOR.(Reference to TEST MODE)
If the L.E.D displays 'LO' or 'HI', there is some trouble with the temperature sensor.
In this case, the processing is designed to perform normal processing. Before change temperature sensor, check the connector and temperature sensor.
2. There is function to give up role of temperature sensor forcibly.
At the first condition in TEST MODE press the RESERVATION button. And after change data by SOAK button, press START/HOLD button.
If so, data input. (11 : perform to temperature sensor, 22 : give up temperature sensor)
3. In the FUZZY course (WASH:14min, RINSE : 2Times, SPIN:5min, COOL WATER SELECTION) the total processing time can be changed by water temperature.

EEPROM UNIT

1)CIRCUIT DIAGRAM



2) EXPLANATION OF CIRCUIT

In contrast with mask ROM, EEPROM which enable WRITE/READ by program, memorize data even during POWER is OFF.

• EEPROM PIN FUNCTION

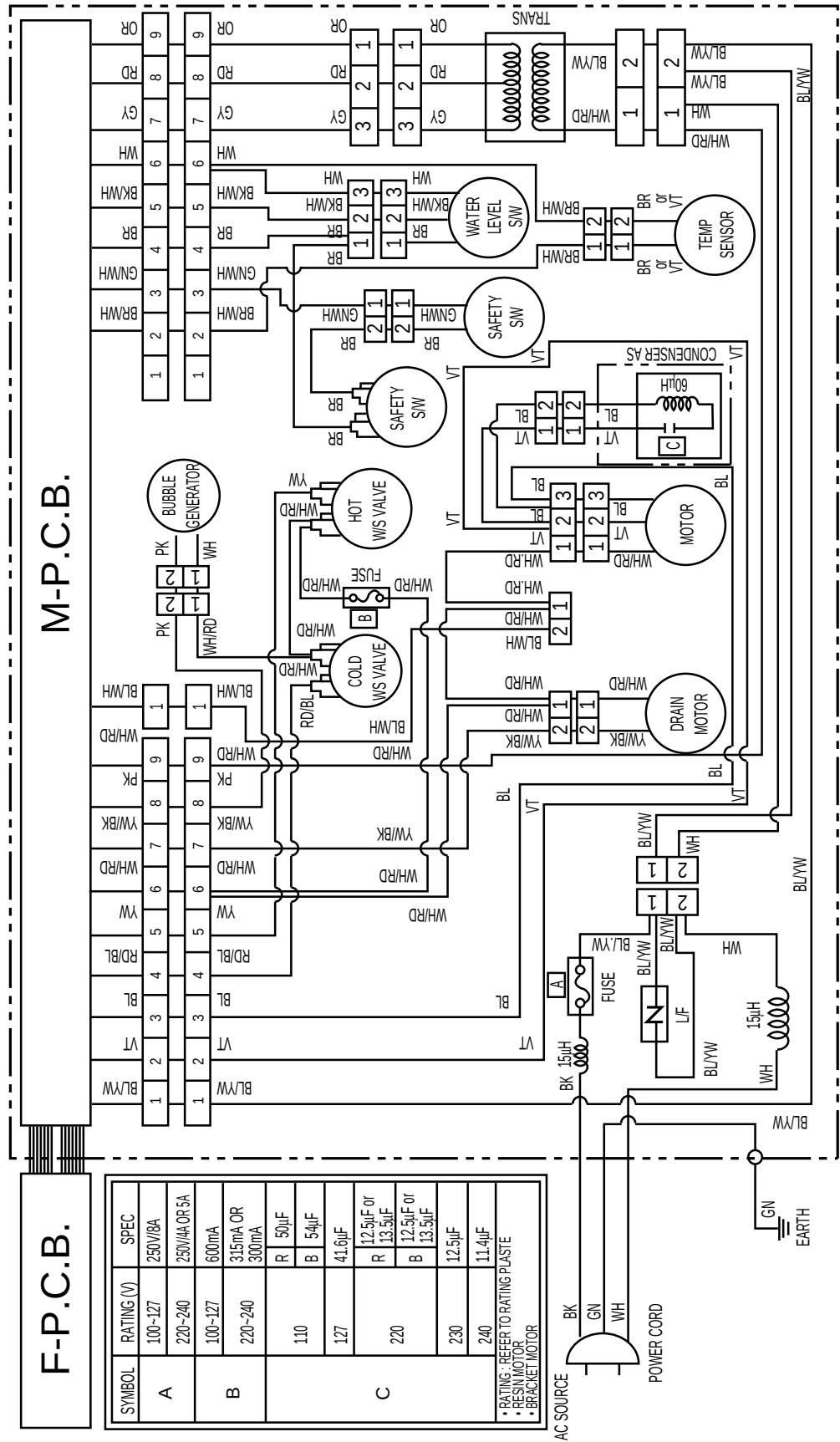
PIN NAME	FUNCTION
CS	Chip selector Chip is enabled when CS is at 'L' level. Set CS to 'H' level before executing instruction.
CLK	Clock input The DI data is latched at the rising edge of CLK. The data is out from DO at the falling edge of CLK. CLK is enable when CS is at 'L' level.
DI	Serial data input The address, command and data input pin.
DO	Serial data output The data output pin
ORG	Organization select The 16-bit organization is selected when ORG is 'H' level. The 8-bit organization is selected when ORG is 'L' level.
RDY/BUSY	Status output 'L' level is output during program or chip eraise operation. 'H' level is output when program or chip eraise operation is completed.

EEPROM stores the selected contents in MEMORY course and LOAD SENSING data.
If you press MEMORY button, MICOM read the contents in MEMORY course and L.E.D displays the selected contents in MEMORY course.

3) CAUTION FOR A/S

1. When the selected contents of MEMORY course in EEPROM can not memorize, EEPROM is defective.

WIRING DIAGRAM



HOW TO CHECK THE P.C.B. ASS'Y

COURSE 1

Keep pushing three button (WASH, RINSE, SPIN SELECTOR) together and turn on the power switch.

No.	TIME	DISPLAY	FUNCTION
1	SEC	L 25	State of first lighting.
2	SEC	20	Temperature which sensing t hermistor. LO : Thermistor open. HI : thermistor short.
3	SEC		All LED light 8 times and go back to first stage.

COURSE 2

Processign COURSE 1, Push the spin selector oncoer three times according to desire check mode.

TIME TO PUSH THE SPIN BUTTON	DISPLAY	FUNCTION
1st Time	d1 FUZ	
2nd Time	d2 FUZ	drain`→`spin`→`cold water`→`hot water`→`pulsator rotae(right)`→`bubble`→`pulsator rotae(left)`→`fan`→`heater`→`door check(dc/do)`→`off
3rd Time	d3 FUZ	Repeat drive without "off" in "d2"

PARTS LIST(DWF-7588TE/NE/ME, 8088TE/NE/ME)

NO.	PARTS CODE	PARTS NAME	DESCRIPTION	Q'TY	REMARK
P1	3614504200	PLATE T	ABS	1	
P2	3614211400	PANEL F	ABS	1	
P3	3614202000	PANEL B	ABS	1	
P4	3611710500	DOOR B	ABS	1	
P5	361201800	HANDLE DOOR	ABS	1	
P6					
P7	PRPSSWNQ00	PCB ASS'Y	DWF-1088	1	
P8	5EP4054811	TRANS POWER	AC 115V/50HZ DC 0.65A	1	TE MODEL
	TEP4054801		AC 230V/50HZ DC 0.65A	1	NE,ME MODEL
P9	3612712700	HARNESS AS	DWF-9280RD	1	
P10	3618901900	UNIT BUBBLE	AC 110V-130V/50,60HZ	1	TE MODEL
	3618900500		AC 220V/50HZ	1	NE,ME,MODEL
P11	3610903000	CAP DOOR AS	DWF-9290RD	2	
P12	3619006600	SWITCH DOOR AS	DWF-7580RD	1	
T13	3612300100	GASKET	SLILICON	2	
P14	3610902000	CAP VALVE	ABS	2	
P15	7121401608	SCREW TAPPING	T2S PAN 4X16 SUS	8	
P16	3615403630	VALVE INLET(WARM)	AC 110-130V/60HZ HOT	1	TE MODEL
	3615403830		AC 240V/50HZ WARM	1	NE,ME MODEL
P17	3615403510	VALVE INLET(COLD)	AC 110-130V/60HZ COLD	1	TE MODEL
	3615403710		AC 240/50HZ COLD	1	NE,ME MODEL
P18	3610400800	BASE DETERGENT	PP	1	
P19	3619005600	SWITCH SAFETY	DC 15V 100mA	1	
P20	3611604100	DECORATOR	PC FILM 0.254T	1	
P21	3610901000	CAP	CR	2	
P22	3611521700	CUSHION DOOR	SILICON	4	
P23	3619005110	SWITCH PRESSURE	PS-D7	1	
P24	3611710400	DOOR F	ABS	1	
P25	3616001200	SPECIAL SCREW	TRS 5X73 MFZN	2	
P26	7122402011	SCREW TAPPING	T2S TRS 4X20 MFZN	2	
P27	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	1	
P28	3611405100	COVER L	ABS	1	
P29	3611404600	COVER R	ABS	1	
P30					
P31					
P32	3612900400	HINGE LEFT	POM	1	
P33	3612900300	HINGE RIGHT	POM	1	
P34	3615103600	SPRING LEFT	SUS 304 D=2.0	1	
P35	3615103500	SPRING RIGHT	SUS 304 D=2.0	1	

NO.	PARTS CODE	PARTS NAME	DESCRIPTION	Q'TY	REMARK
P36	3611105400	CASE DETERGENT	ABS	1	
P37	3610902600	CAP REAR	CR	4	
B1	3610076030	ASS'Y CONDENSER	50μF+60μF, CONN	1	TE MODEL
	3610031930		12.5μF+60μF, CONN	1	NE MODEL
	3610045630		11.4μF+60μF, CONN	1	ME MODEL
B2	3612200100	FRAME TOP	PP	1	
B3	3610801800	CABINET	PCM 0.7T	1	
B4	3610300900	BASE UNDER	PP	1	
B5	3611404400	COVER BACK	PP	1	
B6	3617700400	LEG FIX	BUTLY RUBBER	2	
B7	4509M10032	FIXTURE	PP	2	
B8	7122502011	SCREW TAPPING	T2S TRS 5X20 MFZN	2	
B9	3612000200	FIXTURE LEG	PPG	2	
B10	3618900700	UNIT LEG	RUBBER +BOLT INSERT	2	
B11	3613000600	HOLDER LEG	ABS	2	
B12	3610901700	CAP LEG L	ABS	1	
B13	3610901800	CAP LEG R	ABS	1	
B14	3614504300	PLATE UPPER	PP	1	
B15	3614502000	PLATE LOWER	PP	1	
T1	7122401611	SCREW TAPPING	T2S TRS 4X16 MFZN	4	
T2	3611402000	COVER TUB	PP	1	
T3	4505E3203A	SCREW PULSATOR FIX	SUS 6X26.5	1	
T4	4505E32050	RING-O	D5.5	1	
T5	3619700800	PULSATOR	P.P	1	
T6	4509G83080	INSERT PULSATOR	SMS 1025	1	
T7	4507D83070	SPECIAL NUT	ZNDC2 CU, NI-COATING	1	
T8	4509L83070	SPECIAL WASHER	SUS 304 2.0T P144	1	
T9	3610085500	ASS'Y FILTER	P.P +NYLON 74X130	1	
T10	3619800200	ASS'Y SUSPENSION A	DWF-6670D L=75mm	3	
T11	3619800300	ASS'Y SUSPENSION B	DWF-6670D L=80mm	1	
T12	3610018100	TUB ASS'Y	PP B10-CERAMIC	1	DWF-7580'S
	3610014800		DWF-8080R2	1	DWF-8080'S
T13	3617200200	FLANGE TUB	ADC12	1	
T14	3615403900	ASS'Y VALVE DRAIN	DWF-8590RDS	1	
T15	3618800100	TUB O	PP	1	
T16	4509M34010	BASE	SBHG 2.0T	1	
T17	4508E83100	SPECIAL BOLT BASE	6.5X23	14	
T18	7640801611	BOLT HEX	6B-1 8X16SW MFZN	4	
T19	3611502101	CUSHION DOWN	POM(13mm)	2	
T20	3964220500	MOTOR CONDENSOR	AC 110V/60HZ. RESIN	1	TE MODEL

NO.	PARTS CODE	PARTS NAME	DESCRIPTION	Q'TY	REMARK
	3964310600		AC220~240V/50HZ. RESIN	1	NE,ME MODEL
T21	7650804211	SPECIAL BOLT	6B-1 8X42 MFZN	2	
T22	3618400700	PULLEY MOTOR	ADC-12 DP=52.5	1	TE MODEL
	3618400300		ADC-12 DP=60.5	1	NE,ME MODEL
T23	7391600011	NUT HEX	6N-1-6 MFZN	2	
T24	3616000701	SPECIAL BOLT PULLEY	6B-1 6X20 SM20CK(ZN)	1	
T25	3616100600	BALANCER WEIGHT	FC 20 3550GR	1	
T26	7650802511	SPECIAL BOLT	6B-1-8X26 MFZN	2	
T27	3617300601	GEAR MECHANISM	GM-8030D	1	
T28	7640801611	BOLT HEX	6B-1-8X16 SW MFZN	2	
T29	450ED45030	MOTOR SYNCHRONOUS	AC 110V/60HZ	1	TE MODEL
	3966010110		AC 220-240V/50~60HZ	1	NE,ME MODEL
T30	3618300100	PLATE GEAR PROTECT	SBHG 1.6T	1	
T31	4500D83100	NOZZLE AS	BUBBLING	1	
T32	4500D08180	CLAMP	SWC	1	
T33	4500D08170	HOSE	ID=8.0, OD=12.0	1	
T34	4500D08190	PIPE JOINT	ABS	1	

PARTS LIST(DWF-9288TE/NE/ME, 1088TE/NE/ME)

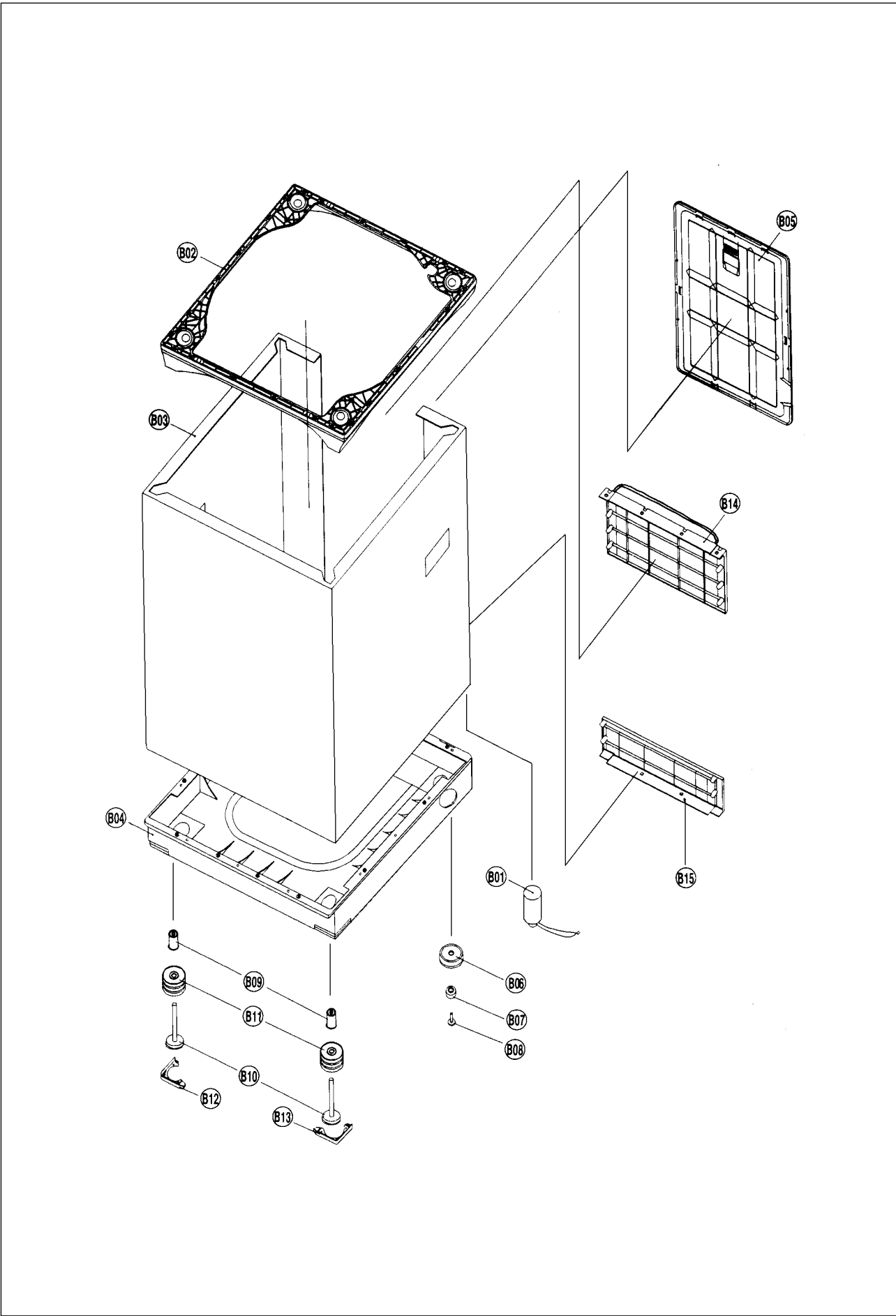
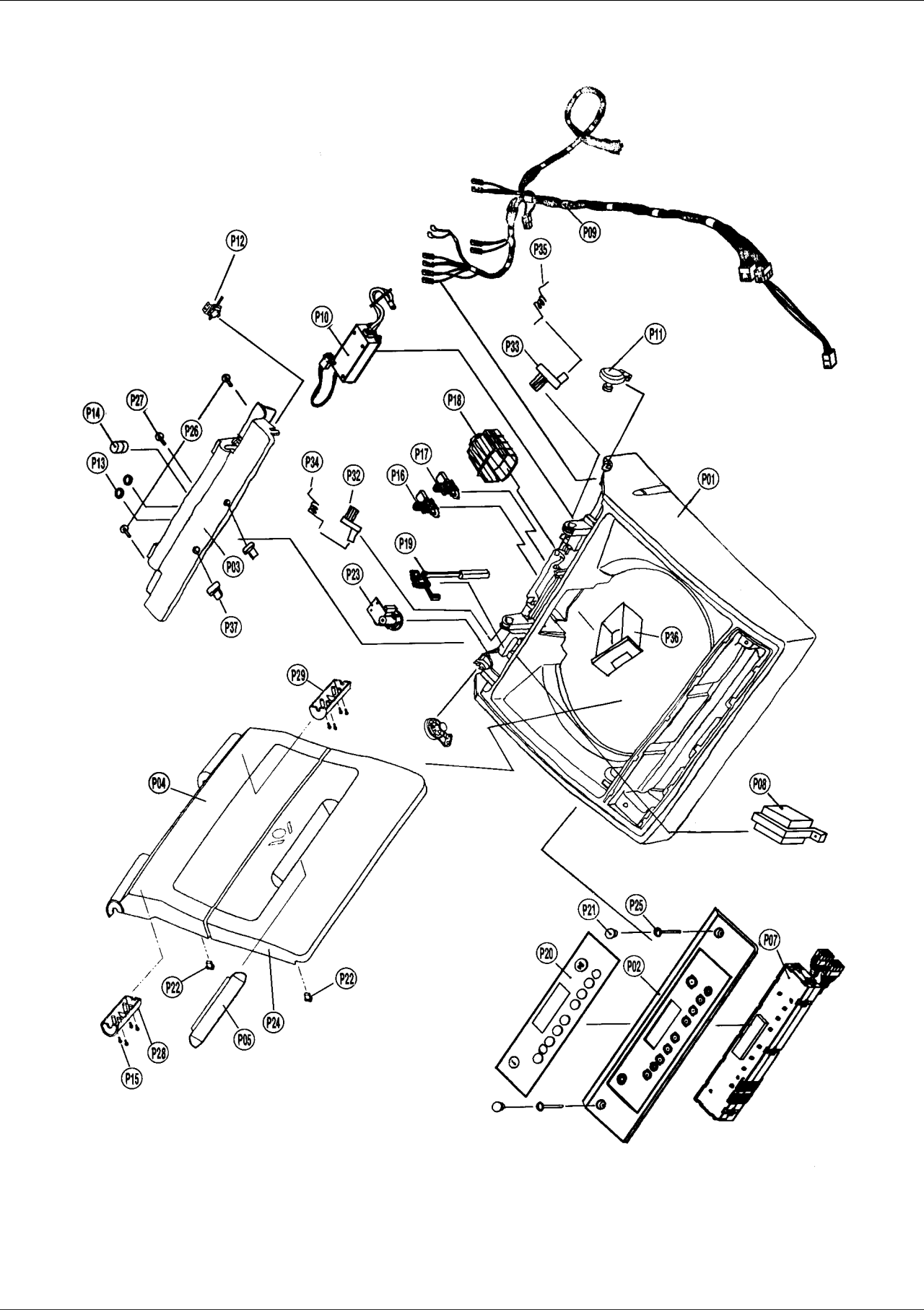
NO.	PARTS CODE	PARTS NAME	DESCRIPTION	Q'TY	REMARK
P1	3614502100	PLATE T	ABS	1	
P2	3614201700	PANEL F	ABS	1	
P3	3614201000	PANEL B	ABS	1	
P4	3614201700	DOOR B	ABS		
P5	3612601800	HANDLE DOOR	ABS	1	
P6					
P7	PRPSSWNQ00	PCB ASS'Y	DWF-1088	1	
P8	5EP4054811	TRANS POWER	AC 115V/50Hz. C 0.65A	1	TE MODEL
	5EP4054801		AC 230V/50Hz. AC 0.65A		
P9	3612712700	HARNESS AS	DWF-9280RD	1	
P10	3618901900	UNIT BUBBLE	AC 110~130V/50, 60Hz	1	TE MODEL
	3618900500		AC 220V/50Hz	1	NE,ME MODEL
P11	3610903000	CAP DOOR AS	DWF-9290RD	2	
P12	3619006600	SWITCH DOOR AS	DWF-7580RD	1	
P13	3612300100	GASKET	SILICON	2	
P14	3610902000	CAP VALVE	ABS	2	
P15	7121401608	SCREW TAPPING	T2SPAN 4X16 SUS	8	
P16	3615403510	VALVE INLET(WARM)	AC 110~130V/60Hz, HOT	1	TE MODEL
	3615403830		AC 240V/50Hz, COLD	1	NE,ME MODEL
P17	3615403510	VALVE INLET(COLD)	AC 110~130V/Hz, COLD	1	TE MODEL
	3615403710		AC 240V/50Hz, COLD	1	NE,ME MODEL
P18	3610400800	BASE DETERGENT	PP	1	
P19	3619006700	SWITCH SAFETY	AC 15V 10mA	1	
P20	3611604100	DECORATOR	PC FILM 0.254T	1	
P21	3610901000	CAP	CR	2	
P22	3611521700	CUSHION DOO	SILICON	4	
P23	3619005110	SWITCH PRESSURE	PS-D7	1	
P24	3611710300	DOOR F	ABS	1	
P25	3616001200	SPECIAL SCREW	TRS 5X73 MFZN	2	
P26	7122402011	SCREW TAPPING	T2S TRS 4X20 MFZN	2	
P27	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	1	
P28	3611406000	COVER LEFT	ABS	1	
P29	3611405900	COVER RIGHT	ABS	1	
P30					
P31					
P32	3612900400	HINGE LEFT	POM	1	
P33	3612900300	HINGE RIGHT	POM	1	
P34	3615103600	SPRING LEFT	SUS 304 D=2.0	1	
P35	3615103500	SPRING RIGHT	SUS 304 D=2.0	1	

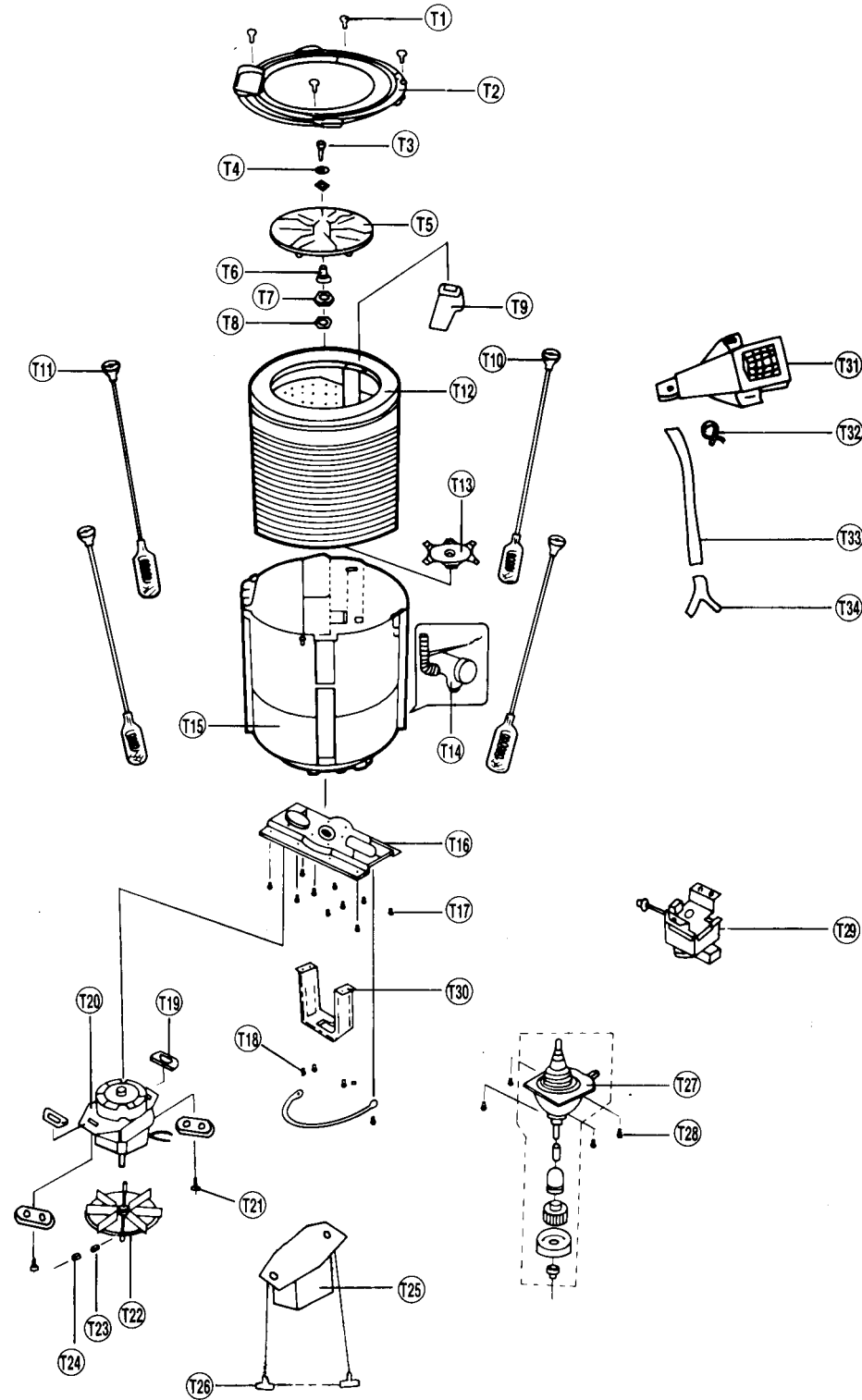
PARTS LIST(DWF-9288 TE/NE/ME, 1088 TE/NE/ME)

NO.	PARTS CODE	PARTS NAME	DESCRIPTION	Q'TY	REMARK
P36	3611105400	CASE DETERGENT	ABS	1	
P37	3610902600	CAP REAR	CR	4	
B1	3610076130	ASS'Y CONDENSER	54μF+60μF, CONN	1	TE MODEL
	3610031930		12.5μF+60μF, CONN	1	NE MODEL
	3610045630		11.4μF+60μF, CONN	1	ME MODEL
B2	3612200200	FRAME TOP	PP	1	
B3	3610800700	CABINET	PCM 0.7T	1	
B4	3610301000	BASE UNDER	PP	1	
B5	3611404400	COVER BACK	PP	1	
B6	3617700400	LEG FIX	BUTLY RUBBER	2	
B7	4509M10032	FIXTURE	PP	1	
B8	7122502011	SCREW TAPPING	T2S TRS 5X20 MFZN	2	
B9	3612000200	FIXTURE LEG	PRG	2	
B10	3618900700	UNIT LEG	RUBBER+BOLT INSERT	2	
B11	3613003600	HOLDER LEG	ABS	2	
B12	3610901800	CAP LEG R	ABS	1	
B13	3610901800	CAP LEG R	ABS	1	
B14	3614502200	PLATE UPER	PP	1	
B15	3614502000	PLATE LOWER	PP	1	
T1	7122401611	SCREW TAPPING	T2S TRS 4X16 MFZN	1	
T2	4509M83030	COVER TUB	PP	1	
T3	4505E3203A	SCREW PULSATOR FIX	SUS 6X26.5	1	
T4	4505E32050	RING-O	D5.5	1	
T5	3619701400	PULSATOR	PP	1	
T6	4509G32221	INSTER PULSATOR	SMS 1025	1	
T7	4509G83080	SPECIAL NUT	ZNDC2 Cu, Ni. COATING	1	
T8	4509L83070	SPECIAL WASHER	SUS304 2.0T P144	1	
T9	3610085500	ASS'Y FILTER	PP+NYLONG 74X130	1	
T10	3610065800	ASS'Y SUSPENSION A	DWF-9290RD L=100mm	2	DWF-9280'S
	3619800600		DWF-9290RD L=105mm	2	DWF-1080'S
T11	3610065900	ASS'Y SUSPENSION B	DWF-9290RD L=105mm	2	DWF-9280'S
	3619800700		DWF-9290RD L=110mm	2	DWF-1080'S
T12	3618802700	TUB ASS'Y	PP	1	DWF-9280'S
	3618802800		DWF-1080R2	1	DWF-1080'S
T13	3617200100	FLANGE TUB	ADC12	1	
T14	3615403900	ASS'Y VALVE DRAIN	DWF-8590RDS	1	
T15	4509M83013	TUB O	PP	1	
T16	4509M34010	BASE	SBHG 2.0T	1	
T17	4505E83100	SPECIAL BOLT BASE	6.5X23	14	

NO.	PARTS CODE	PARTS NAME	DESCRIPTION	Q'TY	REMARK
T18	7640801611	BOLT HEX	6B-1 8X16 SW MFZN	4	
T19	3611502101	CUSHION DOWN	POM(13mm)	2	
T20	3964820800	MOTOR CONDENSOR	AC 120V/60Hz	1	TE MODEL
	3964821000		AC 220~240V/50Hz	1	NE, ME MODEL
T21	7650804211	SPECIAL BOLT	6B-1 8X42 MFZN	2	
T22	3618400700	PULLEY MOTOR	ADC-12 DP=52.5	1	TE MODEL
	3618400300		ADC-12 DP=60.5	1	NE, ME MODEL
T23	7391600011	NUT NEX	6N-1-6 MFZN	1	
T24	3616000701	SPECIAL BOLT PULLEY	6B-1 6X20 SM20 CK(ZN)	1	
T25	3616100600	BALANCER WEIGHT	FC20 3550GR	1	
T26	7650802511	SPECIAL BOTL	6B-1-8X25 MFZN	2	
T27	3617301000	GEAR MECHANISM	GM-6685D, NTN	1	
T28	7640801611	BOLT HEX	6B-1-8X16SW MFZN	2	
T29	450ED45030	MOTOR SYNCHRONOUS	AC 110V/60Hz	1	TE MODEL
	3966010110		AC220~240V/50~60Hz	1	NE, ME MODEL
T30	3618300100	PLATE GEAR PROTECT	SBHG 1.6T	1	
T31	4500D83100	NOZZLE ASS'Y	BUBBLING	1	
T32	4500D08180	CLAMP	SWC	1	
T33	4500D08170	HOSE	ID=8.0 OD=12.0	1	
T34	4500D08190	PIPE JOINT	ABS	1	

PARTS DIAGRAM





P.C.B. PARTS LIST

REF NO.	PARTS CODE	PARTS NAME	DESCRIPTION	REMARK
BUZZER	3615900100	BUZZER	WES27-20P 2KHZ	
LR-09	3619501300	CONNECTER AS	LR-09	
LP-09	3612703400	HARNESS AS	LP-09 (DWF-8580)	
LP-01	3619501400	CONNECTER AS	LP-01(PUMP)	PUMP MODEL INSERT
C13	CEXF1A332V	C ELECTRO	RSS 10V 3300MFZ 13X25	
C18	CMYB2X223J	C MYLAR	AC 250V 0.022MF	
C21	CMYB2X223J	C MYLAR	AC 250V 0.022MF	
C22	CMYB2X103J	C MYLAR	EU 600V 0.01MF	
C25	CMYB2X103J	C MYLAR	EU 600V 0.01MF J	
C27	CMYB2X103J	C MYLAR	EU 250V 0.068MF J	PUMP MODEL INSERT
C28	CMYB22E683J	C MYLAR	EU 250V 0.068MF J	
C30	CMYB2E683J	C MYLAR	EU 250V 0.068MF J	
C33	CEXF1V222V	C ELECTRO	RSS 35V 3300MF 16X31.5	
C34	CEXE1C471A	C ELECTRO	RS 16V 470MF 10X20	
C39	CEXF1V102V	C ELECTRO	35V RSS 1000MF (13X25)	
D4	D15399---	DIODE	1N5399	
FW1	3612703000	HARNESS FLAT	125, 13P	
FW2	3612703000	HRANESS FLAT	125, 13P	
IC1	12BS860210	IC MICOM	LC866020Y5943	
IC10	1PQ09RF1---	IC REGULATOR	PQ09RF1	
IC2	1TC89101P--	IC EEPROM	ROM 1K TOSHIBA	
IC3	1S8054HN---	IC AUDIO RESET	S-8054HN	
IC4	TPC817C---	RHOTO COUPLER	PC817C	
IC5	1L7806----	IC REGULATER	L7806	
IC09	1DWM-N8B---	IC HYBRID	DWN-N8B	
LW	4507D72154	HARNESS	LEAD A 120MM RWF-660T	
RA1	RA-84X473J	R ARRAY	5P (4) 1/8 47K OHM J	
RA2	RA-85X103J	R ARRAY	5P (4) 1/8 10K OHM J	
RA3	RA-85X103J	R ARRAY	5P (4) 1/8 10K OHM J	
RA4	RA-85X103J	R ARRAY	5P (4) 1/8 10K OHM J	
RY1	5SC0101120	SW RELAY	VS-9MK-NR	
R56	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	
R57	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	
R58	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	
R59	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	PUMP MODEL INSERT
R60	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	
R62	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	
R63	RS01Y101J-	R M-OXIDE FILM	1W 100 OHM J	
R91	RS01Y104JS	R M-OXIDE FILM	2W 100K OHM J(SMALL TYPE)	

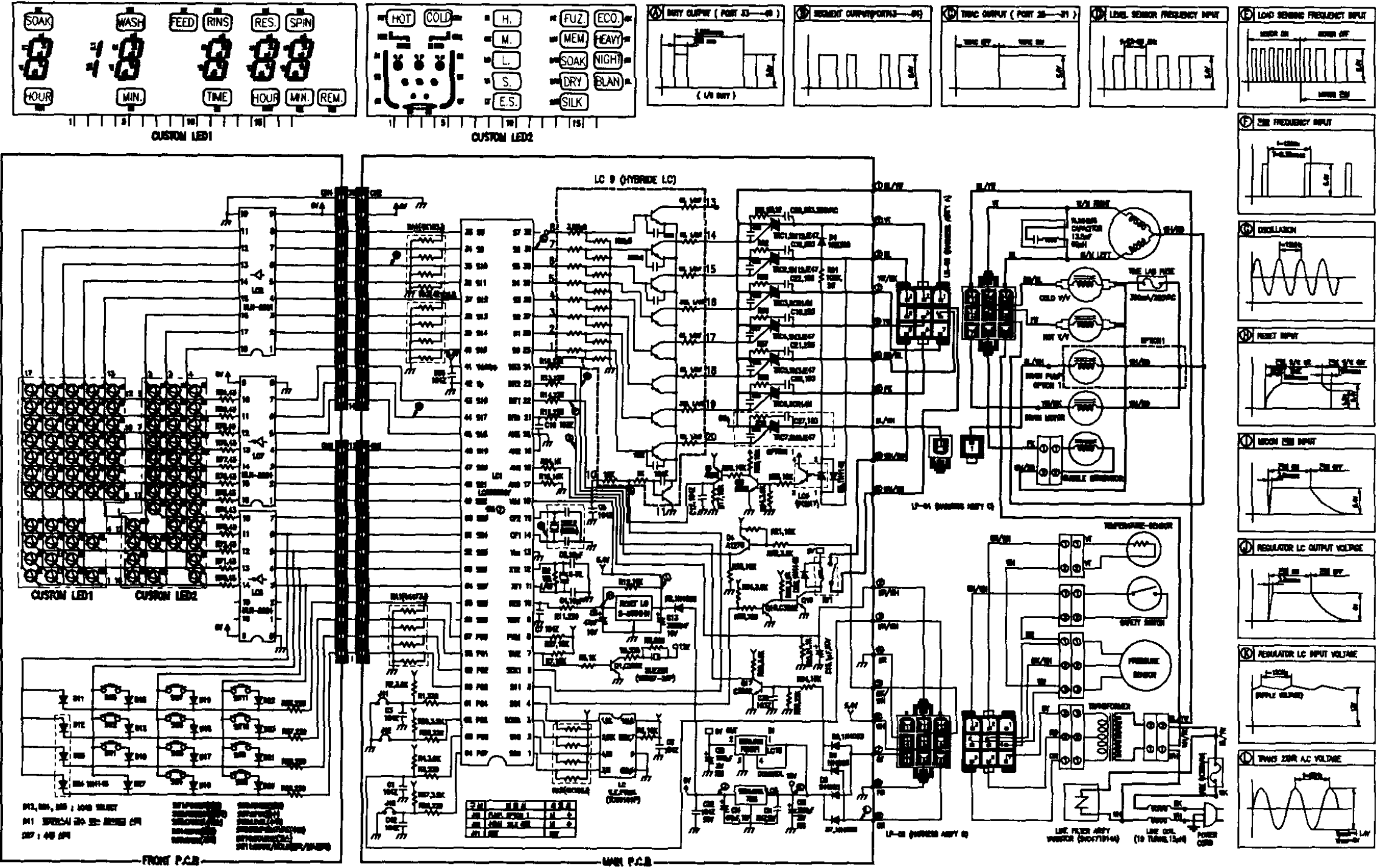
REF NO.	PARTS CODE	PARTS NAME	DESCRIPTION	REMARK
TRC1	TSM12JZ47F	TRIAC TOSHIBA	12A, LEAD FORMING TYPE	
TRC2	TSM12JZ47F	TRIAC TOSHIBA	12A, LEAD FORMING TYPE	
TRC3	TBCR1AMAB-	TRIAC	BCR1AM FORMING TYPE	
TRC4	TSM3JZ47--	TRIAC	3A INSULATION TYPE	
TRC5	TSM3JZ47--	TRIAC	3A INSULATION TYPE	
TRC6	TBCR1AMAB-	TRIAC	BCR1AM FORMING TYPE	
TRC7	TSM8JZ47F-	TRAIC TOSHIBA	8A, LEAD FORMING TYPE	PUMP MODEL INSERT
X-TAL	5PAMX38T--	CRYTAL QUARTZ	MX-38T(NDK)	
0001	4509D72050	HEAT SINK	REGULATER, 25X35X20	
0002	3617400300	HEAT SINK	50X50 T=3	
0003	3611200300	CLAMP CORD	DALA-1, L=30MM	
0004	3611200400	CLAMP CORD	DALA-2, L=50MM	
12MCR	5PCST12MTW	REASONATOR CERAMIC	CST12.00MTW	
C1	CBF1H104Z	C CERA SEMI	50V F 0.1MF Z(TAPPING)	
C10	CCXF1H103Z	C CERA	50V F 0.01MF Z(TAPPING)	
C12	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z(TAPPING)	
C15	CBXE1H109A	C ELECTRO	50V RS 1MF (5X11) (TAPPING)	
C17	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C19	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C20	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C23	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C24	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C26	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	PUMP MODEL INSERT
C29	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C3	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C31	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C32	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C35	CBXF1H103Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C36	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C4	CXCH1H180Z	C CERA	50V CH 18PF J (TAPPING)	
C40	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C42	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C5	CXCH1H180Z	C CERA	50V CH 180MF J (TAPPING)	
C6	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C7	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
C8	CEXE1C470Z	C ELECTRO	RS 16V 47MF 6.3X11	
C9	CBXF1H104Z	C CERA SEMI	50V F 0.1MF Z (TAPPING)	
Q1	TZTC3202Y-	TR	KTC3202Y (AUTO) (1959Y)	
Q16	TZTC3202Y-	TR	KTC3202Y (AUTO) (1959Y)	
Q17	TZTC3202Y-	TR	KTC3202Y (AUTO) (1959Y)	

REF NO.	PARTS CODE	PARTS NAME	DESCRIPTION	REMARK
Q18	TZTC3202Y-	TR	KTC3202Y (AUTO) (1959Y)	
Q19	TZTC3202Y-	TR	KTC3202Y (AUTO) (1959Y)	
Q3	TZTC1207Y-	TR	KTC1207Y (AUTO) (562Y)	
Q4	TZTC1207Y-	TR	KTC1207Y (AUTO) (562Y)	
D2	DKN4003A--	DIODE	KN4003A AUTO 26MM	
D26	DKN4148A--	DIODE	KN4148A AUTO 26MM	
D5	DKN4148A--	DIODE	KN4148A AUTO 26MM	
D6	DKN4003A--	DIODE	KN4003A AUTO 26MM	
D7	DKN4003A--	DIODE	KN4003A AUTO 26MM	
D8	DKN4003A--	DIODE	KN4003A AUTO 26MM	
D9	DKN4003A--	DIODE	KN4003A AUTO 26MM	
R1	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R11	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R12	RD-4Z103JK	R CARBON FILM	1/4 220 OHM J	
R13	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R14	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R15	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R17	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R18	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R19	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R2	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R20	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R21	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R22	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R23	RD-4Z392JK	R CARBON FILM	1/43.9K OHM J	
R24	RD-4Z102JK	R CARBON FILM	1/4 1K OHM J	
R27	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R3	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R39	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R4	RD-4Z392JK	R CARBON FILM	1/43.9K OHM J	
R43	RD-4K5112F	R METAL FILM	1/4 51.1K OHM J	
R5	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R53	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R54	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R55	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R6	RD-4Z102JK	R CARBON FILM	1/4 1K OHM J	
R64	RD-4Z103JK	R CARBON FILM	1/4 22K OHM J	
R65	RD-4Z223JK	R CARBON FILM	1/4 10K OHM J	
R7	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R8	RD-4Z612JK	R CARBON FILM	1/4 620 OHM J	

REF NO.	PARTS CODE	PARTS NAME	DESCRIPTION	REMARK
R82	RD-4Z106JK	R CARBON FILM	1/4 10M OHM J	
R83	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R84	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R86	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R87	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R88	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R89	RD-4Z392JK	R CARBON FILM	1/4 3.9K OHM J	
R9	RD-4Z103JK	R CARBON FILM	1/4 10K OHM J	
R90	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
C-LED1	3610050110	ASSY LED CUSTOM	DWF-7500 CUSTOM A	USING ENGLISH
C-LED2	3610050230	ASSY LED CUSTOM	DWF-1088 CUSTOM B	USING ELGLISH
IC6	1ULN2004A-	DRIVE IC ULN2004A		
IC7	1ULN2004A-	DRIVE IC ULN2004A		
IC8	1ULN2004A-	DRIVE IC ULN2004A		
SW1	5S50101400	SW TACT	KQB-902 1C 1P	
SW10	5S50101400	SW TACT	KQB-902 1C 1P	
SW11	5S50101400	SW TACT	KQB-902 1C 1P	
SW2	5S50101400	SW TACT	KQB-902 1C 1P	
SW3	5S50101400	SW TACT	KQB-902 1C 1P	
SW4	5S50101400	SW TACT	KQB-902 1C 1P	
SW5	5S50101400	SW TACT	KQB-902 1C 1P	
SW6	5S50101400	SW TACT	KQB-902 1C 1P	
SW7	5S50101400	SW TACT	KQB-902 1C 1P	
SW8	5S50101400	SW TACT	KQB-902 1C 1P	
SW9	5S50101400	SW TACT	KQB-902 1C 1P	
D10	DKN4148---	DIODE	KN4148 AUTO 26MM	
D11	DKN4148---	DIODE	KN4148 AUTO 26MM	
D12	DKN4148---	DIODE	KN4148 AUTO 26MM	L.S. DATA SELECT
D13	DKN4148---	DIODE	KN4148 AUTO 26MM	
D15	DKN4148---	DIODE	KN4148 AUTO 26MM	
D16	DKN4148---	DIODE	KN4148 AUTO 26MM	
D17	DKN4148---	DIODE	KN4148 AUTO 26MM	
D18	DKN4148---	DIODE	KN4148 AUTO 26MM	
D19	DKN4148---	DIODE	KN4148 AUTO 26MM	
D20	DKN4148---	DIODE	KN4148 AUTO 26MM	
D21	DKN4148---	DIODE	KN4148 AUTO 26MM	
D22	DKN4148---	DIODE	KN4148 AUTO 26MM	
D23	DKN4148---	DIODE	KN4148 AUTO 26MM	
D24	DKN4148---	DIODE	KN4148 AUTO 26MM	L.S. DATA SELECT
D25	DKN4148---	DIODE	KN4148 AUTO 26MM	L.S. DATA SELECT

REF NO.	PARTS CODE	PARTS NAME	DESCRIPTION	REMARK
D27	DKN4148---	DIODE	KN4148 AUTO 26MM	
R66	RD-4Z221JK	R CARBON FILM	1/4 220 OHM J	
R67	RD-4Z221JK	R CARBON FILM	1/4 220 KOHM J	
R68	RD-4Z221JK	R CARBON FILM	1/4 220 KOHM J	
R69	RD-4Z221JK	R CARBON FILM	1/4 220 KOHM J	
R70	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R71	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R72	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R73	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R74	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R75	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R76	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R77	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R78	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R79	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R80	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
R81	RD-4Z430JK	R CARBON FILM	1/4 43 OHM J, 26PITCH	
J40	W581GY1005	JUMP WIRE	AWG22 1/0.65 SN 10 AUTO	PUMP MODEL INSERT
J41	W581GY1005	JUMP WIRE	AWG22 1/0.65 SN 10 AUTO	SILK COURSE CANCEL
J42	W581GY1005	JUMP WIRE	AWG22 1/0.65 SN 10 AUTO	SUIT

CIRCUIT DIAGRAM



BARE PCB(TOP)



BARE PCB(BOTTON)

